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MONTHLY REPORT

OF THE



DEPARTMENT OF AGRICULTURE

FOR

JANUARY, 1871.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1871.

MONTHLY REPORT.

DEPARTMENT OF AGRICULTURE,

Statistical Division, January 21, 1871.

SIR: I herewith report for publication a statement of the yield and home prices of farm products, tabulated and condensed from the January statistical returns of county correspondents, with notes upon certain crops, and extracts from correspondence. I also submit a paper by the Botanist, on American Desert Flora, memoranda upon the cultivation of the Plains, and recent scientific notes bearing upon rural economy, with items from various sources, and monthly meteorological tables.

J. R. DODGE, *Statistician.*

Hon. HORACE CAPRON, *Commissioner.*

YIELD AND HOME PRICES OF FARM PRODUCTS.

The January circular inquires the yield per acre in each county, of the principal products of the farm, and also the average prices obtained by farmers in home markets.

YIELD.

The most noticeable feature in the returns is the uniformly high rate of yield of corn, as compared with that of 1869, as also with the average of a series of years. The increase over 1869 in the northern half of New England appears to have been at least five bushels per acre, while the southern half, in consequence of severe drought, shows a small decrease. The Middle States present an increase of nearly five bushels per acre. Virginia and the Carolinas suffered severely from drought, and report a reduced yield. The Gulf States have a better crop than last year, the advance ranging from one to six bushels per acre. The States of the Mississippi and Ohio valleys, with the exception of Iowa, present higher figures than last year. The increase is marked in Illinois, the yield having advanced from 23.2 to 35.2, a difference of 12 bushels per acre, or fully 75,000,000 bushels; yet the difference is due less to the liberal yield of 1870 than to the poor crop of 1869. Kansas shows a reduction from the remarkable yield of the previous seasons. The production of the Pacific Coast is larger than that of 1869. The yield of the principal corn States is stated as follows:

Ohio, 39 bushels; Indiana, 39.5; Michigan, 37; Wisconsin, 38; Minnesota, 33; Iowa, 32; Illinois, 35.2; Missouri, 31.4; Kansas, 28; Nebraska, 29.9; Arkansas, 31.8; Tennessee, 25.8; Kentucky, 32.1. The largest reported yield is that of Vermont, 39.6 bushels. New York is placed at 34 bushels, New Jersey 33, and Pennsylvania 35.8. The range in the cotton States is from 8.9 in South Carolina, 26.5 in Texas, to 31.8 in Arkansas.

The yield of wheat is uniformly less than that of the previous crop. The reduction is 1 bushel in Ohio, 4.5 in Indiana, 2.4 in Illinois, 3.9 in Missouri, 2.2 in Iowa, 0.9 in Minnesota, 1.9 in Wisconsin. The average yield as reported for 1870, is 10 bushels in Kentucky, 13 in Missouri, 12 in Illinois, 11 in Indiana, 13.8 in Ohio, 14 in Michigan, 13.4 in Wisconsin, 15.2 in Minnesota, 12.5 in Iowa, 15 in Kansas, 14.4 in Nebraska, 19 in California, and 19.5 in Oregon. The New England States range from 13.8 to 17.8; New York, 13.8; and New Jersey, 12.8; Pennsylvania, 12. The Southern States, from 7 in South Carolina, to 11.7 in Texas.

The figures illustrating the yield of oats, rye, and barley, correspond with the previous reports of comparative production, and generally show a reduction in the rate of yield. The buckwheat crop is an exception among the small grains, the rate of yield having manifestly advanced, especially in the West. The decrease in the yield of potatoes is general, the rate ranging from 48 bushels in South Carolina to 148 in California. Following California in order, the list producing 100 bushels or more per acre, embraces Vermont, Texas, Maine, Arkansas, Kansas, Louisiana, and Missouri.

The yield of sweet potatoes has been much greater than that of the *Solanum tuberosum*. Texas reports the highest figures, 150 bushels per acre; California, 149; Arkansas, 132; the rate declining to 75 bushels in Virginia. The average is about 110 bushels per acre.

The largest yields of tobacco of the Connecticut seed-leaf variety are in the Connecticut valley and in Pennsylvania, from 1,100 to 1,350 pounds per acre. The average in Kentucky is placed at 696 pounds, 750 in Missouri, 840 in Illinois, 850 in Indiana, 916 in Ohio, 637 in Maryland, 737 in Virginia, 186 in North Carolina, and 650 in Georgia. The comparatively high rate in the States of the Ohio Valley, north of the Ohio River, is due to the recent successful cultivation of the Connecticut seed-leaf there.

The yield of sorghum sirup is assumed to be at the rate of 121 gallons in Ohio, 117 in Nebraska, 115 in West Virginia, 106 in Missouri, 104 in Kansas, and 100 in Michigan, declining to 34 in South Carolina. The average is very nearly 100 gallons per acre.

The yield of hay is decreased in Maine, New Hampshire, Vermont, New York, Pennsylvania, Ohio, all of the Western States, and most of the Southern. The average reduction in yield as compared with the crop of 1869 appears to be about 15 per cent., equivalent to more than four millions of tons.

The area sown in winter wheat the past autumn appears to be slightly increased, though the enlargement is a percentage scarcely greater than the annual increase of population. The States reporting a decrease are Vermont, Delaware, Maryland, Virginia, Mississippi, Tennessee, Indiana. The largest percentage of increase is in Kansas and Nebraska. Minnesota is increasing her area; most of the Western States make a slight advance. A considerable enlargement of the breadth sown is reported for the Pacific Coast.

PRICES.

Returns of prices in home markets indicate a decline from last January in corn and oats, and an advance in wheat, rye, barley, hay, and potatoes. The small flint corn of New England bears a higher price than the dent corn of the West, and the deficient supply of the cotton States keeps prices high in that region. As these figures are averages of county prices for each State, the distance to market, and variable local

demand, as well as quality and kind, have an influence in fixing the rate, and preventing uniformity. The lowest average for corn is that of Nebraska, 36 cents per bushel; the highest in Florida. The averages in New England range from 98 cents in Massachusetts to \$1 14 in Maine, and the highest in the South are, Florida \$1 35, \$1 10 in Louisiana, \$1 06 in South Carolina and Texas.

In January, 1869, the price in the States from North Carolina to Louisiana ranged from \$1 in North Carolina to \$1 45 in Florida. The comparison is as follows in some of the principal corn-growing States :

States.	January, 1870.	January, 1871.
Kentucky.....	\$0 66	\$0 48
Missouri.....	60	44
Illinois.....	57	35
Indiana.....	70	38
Ohio.....	72	48
Michigan.....	74	55
Wisconsin.....	65	52
Minnesota.....	63	51
Iowa.....	50	34
Kansas.....	44	58
Nebraska.....	37	36

The returns of reduced yield in Kansas account for the high average in price.

The averages for the Middle States compare as follows :

States.	January, 1870.	January, 1871.
New York.....	\$1 03	\$0 87
New Jersey.....	95	80
Pennsylvania.....	92	75

The price of wheat in Maine and New Hampshire is lower than in January of last year; elsewhere it is generally higher. The prices of the small amount of native wheat for sale in county markets of the extreme East had not at that date responded to the declining rates ruling in the West for the large crop of 1869. The average has advanced in New York from \$1 37 to \$1 41, and from \$1 34 to \$1 43 in New Jersey. In some of the Southern States, where the supply of native wheat was entirely inadequate to the demand, and less than at present, the average has declined; but in the wheat-growing States the price has advanced in some degree of proportion to the reduction of the crop. The following is a comparison of the averages :

States.	January, 1870.	January, 1871.
Kentucky.....	\$1 10	\$1 00
Missouri.....	80	91
Illinois.....	76	94
Indiana.....	93	1 00
Ohio.....	1 03	1 09
Michigan.....	97	1 08
Wisconsin.....	68	90
Minnesota.....	59	83
Iowa.....	52	78
Kansas.....	79	86
Nebraska.....	51	64
California.....	93	1 10

The emigration to Kansas and the Territories has for years kept up prices for the products of the region west of the Missouri.

The averages for oats have followed the decline noticed in corn, which exhibit a greater reduction in the West than in the East, as is the case with corn. The decline in the Western States is 12 per cent.

A material reduction is noted in the averages for barley and rye, for details of which see the tables.

The averages for potatoes have materially advanced: from 52 to 66 cents in Maine; 45 to 79 in New Hampshire; 38 to 51 in Vermont; 63 to 96 in Massachusetts; 51 to 65 in New York; 62 to 94 in New Jersey. Last year the western averages ranged from 37 cents in Michigan to 72 in Minnesota, only Wisconsin, Iowa, and Kentucky being above 50; now the range is from 52 in Iowa to 95 in Minnesota, three other States having averages above 70, viz: Wisconsin, 74; Ohio, 81; Indiana, 83. The prices in different sections of the South are always variable, depending upon local supply, which is small in the cotton States, and mainly for use in the spring or early summer as a table rarity, or, in the autumn, for seed.

The averages for hay have advanced slightly in the West, and largely in New York and New England. In Pennsylvania and New Jersey there is a small decline, as in the Southern Atlantic States. The drought of this portion of the Atlantic Coast set in too late to injure the hay crop, which was, in some sections, unusually large from the large amount of rain-fall in the spring.

The prices of sorghum sirup are uniformly lower than in January of last year; Ohio, as a fair example, averaging 73 cents per gallon then, and 66 cents now.

The tables will furnish opportunities for comparison which cannot be improved in further detail in this analysis.

Table showing the average yield per acre and price of the principal crops of the United States for 1870, and the area and condition of winter grain.

STATES.	CORN.		WHEAT.		RYE.		OATS.		BARLEY.		BUCKWHEAT.		POTATOES. (<i>Solanum tuberosum</i>)	
	Average yield per acre in 1870, stated in bushels.	Average price per bushel on 1st day of Jan., 1871.	Average yield per acre in 1870, stated in bushels.	Average price per bushel on 1st day of Jan., 1871.	Average yield per acre in 1870, stated in bushels.	Average price per bushel on 1st day of Jan., 1871.	Average yield per acre in 1870, stated in bushels.	Average price per bushel on 1st day of Jan., 1871.	Average yield per acre in 1870, stated in bushels.	Average price per bushel on 1st day of Jan., 1871.	Average yield per acre in 1870, stated in bushels.	Average price per bushel on 1st day of Jan., 1871.	Average yield per acre in 1870, stated in bushels.	Average price per bushel on 1st day of Jan., 1871.
Maine.....	33.0	\$1 14	14.8	\$1 78	17.6	\$1 38	27.4	\$0 65	19.5	\$0 99	24.0	\$0 75	125	\$0 66
New Hampshire.....	36.5	1 00	14.8	1 59	16.0	1 24	29.7	66	21.5	1 07	17.0	83	68	79
Vermont.....	39.6	1 10	16.8	1 63	15.8	1 15	31.7	59	23.3	1 01	17.5	75	140	51
Massachusetts.....	33.0	1 08	17.6	1 75	15.4	1 10	26.4	73	20.7	1 08	14.0	1 02	88	96
Rhode Island.....	26.4	1 06	17.8	1 32	18.0	1 27	32.7	61	24.0	1 06	14.0	1 05	79	98
Connecticut.....	34.0	1 11	14.1	1 41	13.0	1 16	32.4	69	26.5	1 02	17.9	1 03	73	99
New Jersey.....	33.0	87	12.8	1 43	13.4	97	31.0	54	23.9	85	24.3	1 00	98	65
Pennsylvania.....	35.8	75	12.0	1 27	12.0	89	32.6	48	23.9	91	18.0	85	87	78
Delaware.....	25.0	65	10.0	1 25	10.5	78	29.0	50	23.9	1 00	20.0	1 00	75	1 00
Maryland.....	22.5	71	9.7	1 28	10.5	47	24.0	42	23.9	1 11	13.5	1 11	67	90
Virginia.....	20.0	65	9.6	1 24	9.6	73	19.5	42	22.0	70	16.0	70	55	71
North Carolina.....	14.6	78	8.6	1 21	8.3	97	16.2	57	15.0	58	21.4	58	81	70
South Carolina.....	8.9	1 06	7.0	1 89	5.8	1 70	9.7	84	15.0	1 62	16.0	1 62	48	1 15
Georgia.....	13.5	90	8.0	1 47	8.1	1 49	14.6	83	15.0	1 64	21.4	58	78	1 34
Florida.....	10.8	1 35	8.4	1 25	9.7	1 06	12.5	1 00	15.0	1 00	21.4	58	78	1 34
Alabama.....	17.5	93	8.4	1 25	9.7	1 06	15.6	79	15.0	1 00	21.4	58	78	1 34
Mississippi.....	16.5	98	9.7	1 52	10.0	1 62	14.5	90	15.0	1 00	21.4	58	78	1 34
Louisiana.....	22.5	1 10	11.7	1 73	19.1	1 11	21.6	75	30.0	1 33	21.4	58	78	1 34
Texas.....	26.5	1 06	10.8	1 30	18.2	1 00	23.6	62	30.0	1 33	21.4	58	78	1 34
Arkansas.....	31.8	80	10.8	1 30	18.2	81	19.3	46	32.5	75	20.0	75	88	52
Tennessee.....	35.8	47	8.8	1 30	11.3	83	19.3	46	30.0	85	19.9	85	85	58
West Virginia.....	30.4	64	11.4	1 22	14.1	83	27.2	40	30.0	1 05	16.7	75	78	63
Kentucky.....	32.1	48	13.0	1 00	12.1	71	23.2	40	26.4	84	23.6	67	103	56
Missouri.....	31.4	44	13.0	91	15.6	68	25.0	37	26.4	84	23.6	67	103	56
Illinois.....	35.2	38	12.0	94	16.4	60	26.0	32	26.0	62	18.8	68	81	64
Indiana.....	39.5	35	11.0	1 00	13.7	70	28.1	35	24.1	83	19.2	71	45	83
Ohio.....	39.0	48	13.8	1 09	13.8	76	31.1	38	23.5	86	16.3	85	72	81
Michigan.....	37.0	55	14.0	1 08	13.2	75	35.3	39	25.0	80	17.3	62	95	58
Wisconsin.....	33.0	52	13.4	90	13.6	62	27.9	39	26.5	67	20.1	54	63	74
Minnesota.....	33.0	51	15.2	83	17.6	56	32.9	34	24.5	54	18.6	60	53	95
Iowa.....	32.0	34	12.5	78	17.6	53	29.7	30	24.5	54	18.6	60	53	95
Kansas.....	28.0	58	15.0	66	20.8	69	31.5	40	26.0	75	20.6	69	77	56
Nebraska.....	20.9	36	14.4	61	23.7	54	33.7	30	24.0	94	21.6	94	106	56
Nbraska.....	20.9	36	14.4	61	23.7	54	33.7	30	24.0	94	21.6	94	106	56
California.....	33.6	1 20	19.0	1 10	38.0	1 19	35.5	59	26.9	1 26	32.5	1 26	148	1 35
Oregon.....	29.7	1 00	19.5	95	23.0	87	36.0	46	32.3	1 41	30.7	1 41	87	77

Table showing the average yield per acre and price of the principal crops, &c.—Continued.

	POTATOES. (<i>Batatas edulis</i>), sweet.		LEAF TOBACCO.		HAY.		SORGHUM MOLASSES.		WINTER WHEAT.		WINTER RYE.		WINTER BARLEY.	
	Average yield per acre in 1870, stated in bushels.	Average price per bushel on 1st day of Jan., 1871.	Average yield per acre in 1870, stated in pounds.	Average price per pound on 1st day of Jan., 1871.	Average yield per acre in 1870, stated in tons.	Average price per ton on 1st day of Jan., 1871.	Average yield per acre in 1870, stated in gallons.	Average price per gallon on 1st day of Jan., 1871.	Average amt sown com. pared with 1869.	Condition of the crop com. pared with an average.	Average amt sown com. pared with 1869.	Condition of the crop com. pared with an average.	Average amt sown com. pared with 1869.	Condition of the crop com. pared with an average.
Maine.					80	\$19 69			105	100	97	95		
New Hampshire					96	19 55			117	101	101	104		
Vermont.					96	14 50			96	98	82	90		
Massachusetts					1 07	26 14			130	95	134	109		
Rhode Island			1,350	\$9 24	1 09	24 00			101	101	101	101		
Connecticut.			1,250	22 6	1 30	25 60			100	97	82	93		
New York					1 23	17 21			100	105	99	104		
New Jersey.	98	\$1 09			1 40	19 44			100	105	99	104		
Pennsylvania	105	1 15	1,200	25	1 30	13 05	83	\$0 63	100	101	98	99	94	95
Delaware	100	1 00			1 00	20 00	70	50	90	85				
Maryland	107	1 16	637	08 6	1 22	16 33			97	99	99	99		
Virginia	75	92	739	07 3	1 38	14 72	91	57	99	92	91	94		
North Carolina	108	60	586	14 1	1 40	11 47	81	75	100	95	96	90	105	100
South Carolina	74	1 00			1 00	21 66	34	75	100	100	95	97	90	91
Georgia	108	59	650	13 3	1 34	23 33	85	60	107	95	97	94	90	91
Florida	138	75												100
Alabama	96	80	650	25	1 33	20 00	66	69	105	102	90	100		
Mississippi	108	85			1 37	21 25	65	1 00	82	96				
Louisiana	91	67												
Texas.	150	54	750		1 60	15 36	71	81	110	105	94	102		
Arkansas	132	71	666	29 1	1 50	15 00	97	77	103	103	90	100		
Tennessee	98	73	845	08 3	1 43	16 64	85	77	93	96	90	99	80	87
West Virginia	120	1 30	760	11 3	1 26	10 00	115	62	103	104	104	101	126	103
Kentucky	91	1 05	696	08 2	1 36	13 25	86	56	100	102	99	102	102	98
Missouri	113	1 19	750	09 3	1 29	12 82	106	61	103	109	98	108	95	102
Illinois	108	98	840	12 8	1 18	10 74	98	59	115	113	100	108	102	104
Indiana	93	1 46	850	05 3	1 27	11 46	96	63	97	104	99	102	102	104
Ohio	96	1 48	916	12 3	1 31	11 02	121	66	102	101	96	101	97	103
Michigan					1 36	11 17	100	81	104	109	103	110	104	103
Wisconsin					1 34	10 43	99	66	103	104	106	103	104	
Minnesota					1 47	6 77	80	86	119	102	102	102	102	
Iowa	145	1 46			1 34	7 70	98	63	109	115	105	113	105	
Kansas	142	1 20			1 17	7 18	101	63	167	129	119	129	103	118
Nebraska					1 40	5 60	117	77	157	116	120	110		
Nevada									115	97			101	91
California	149	1 45			1 45	16 70			105	93			105	108
Oregon			1,100	22 5	1 45	12 05								

NOTES ON THE CROPS.

WINTER GRAINS.

Seneca County, N. Y.—Winter wheat unusually well put in, and it has larger growth than for years. It is in danger of blight from the excessive cold weather without snow.

Chautauqua County, N. Y.—Wheat sown early is badly stung by the Hessian fly. It has turned yellow and looks badly.

Camden County, N. J.—Early sown wheat much injured by the fly.

Mercer County, N. J.—The very favorable fall season has given a very heavy top to wheat. In many instances it has been pastured off.

Northumberland County, Pa.—Many wheat fields were infested with the fly soon after the plants made their appearance.

Chester County, Pa.—Owing to the poor quality of the last wheat crop, many farmers sowed old wheat, which proves to be quite thin on the ground. Two bushels of new seed is thicker set than where three of old seed was sown.

Lancaster County, Pa.—Wheat sown early looked well until the last of October, when it began to turn yellow. It does not cover the ground. Farmers complain of the Hessian fly. Wheat sown on oat stubble does not appear to suffer much.

Beaver County, Pa.—Some fields of wheat badly damaged by the Hessian fly.

Baltimore County, Md.—Winter grain short, but even on the ground and healthy in appearance. A majority of our farmers have prepared their land well, and are using more manures than years ago. Late seeding is too generally practiced. Mediterranean wheat is nearly altogether sown, and should be in the ground between the 10th and the 20th of September. Heavy losses are annually incurred by this practice of late seeding.

Montgomery County, Md.—Wheat does not make much show at a distance, but looks strong and vigorous in the trenches of the drill.

Washington County, Md.—Wheat promising. In many parts of the county, wheat, as well as the early-sown barley, has been pastured.

Surry County, Va.—Small area of wheat sown, but the plant is in fine condition. Owing to the failure of peanuts more attention will be given to corn this year.

Wythe County, Va.—Wheat sown late on a reduced area. Not looking as well as usual.

Rockbridge County, Va.—Wheat looking badly owing to severe weather and no snow. The blades are as black as ink. Poor prospect for a crop.

Buckingham County, Va.—It is feared that the intense cold dry weather has killed much of the late sown wheat.

Macon County, N. C.—An increased area in wheat, with improved preparation of the soil.

Perquimans County, N. C.—Wheat acreage reduced owing to wet weather and the demand for labor to pick cotton.

Stanly County, N. C.—Wheat sown late but looks well.

Jackson County, N. C.—Wheat plant rather feeble, with stand slightly deficient. Wheat is rapidly displacing rye, and is now successfully grown on mountain lands which twenty years ago were thought to be fit only for rye and oats.

Newbury County, S. C.—Wheat sown late, unpromising.

Lexington County, S. C.—Wheat sown very late, which, with the want of

manure (owing to inability to purchase out of the proceeds of cotton crop) it is feared will seriously affect the crop of 1871.

Union County, S. C.—Farmers late sowing wheat, not more than half up. Ground not well prepared.

Johnson County, Ga.—Wheat sown late, not yet up.

Jackson County, Fla.—Barley is now being tried here, and the plant is looking well. The acreage in oats is annually increasing.

Burnet County, Texas.—For want of seed only a small area of wheat has been sown this fall. Send us men from the North and we will raise more grain and less cotton.

Red River County, Texas.—Wheat fully up to average, with acreage largely increased.

Columbia County, Ark.—Area in wheat slightly increased, sown late. Tolerably good stand.

Taney County, Mo.—One-third more wheat sown this year than last.

Franklin County, Mo.—Wheat sown in September much more promising than that sown later.

Pettis County, Mo.—The fly has done some damage to early sown wheat.

Moniteau County, Mo.—Wheat much injured by the Hessian fly.

Cooper County, Mo.—Wheat injured by the fly.

Benton County, Mo.—Wheat never presented a more promising appearance.

Shelby County, Ky.—Decrease of 30 per cent. in wheat acreage, owing to uncertainty of yield and low price for several years past. Rye is growing in favor, as it furnishes good winter and spring pasturage without materially injuring the yield of grain, most of which is fed to hogs. As a fertilizer rye is considered equal to two crops of red clover, especially if followed by corn. Increased acreage over thirty per cent.

Henry County, Ky.—Prospects for winter grain exceedingly flattering.

Ohio County, Ky.—The dry freeze has greatly injured at least the appearance of wheat.

Smith County, Tenn.—Owing to the low price of wheat the acreage has been reduced fully 20 per cent.

Weakley County, Tenn.—Much damage is apprehended to the wheat crop from the severe cold.

Braxton County, W. Va.—Condition of wheat and rye very promising.

Nicholas County, W. Va.—Wheat not so extensively sown as last year.

Putnam County, W. Va.—A hard winter thus far for wheat and barley; weather dry and cold, with no snow.

Schuyler County, Ill.—Wheat was put in with greater care than usual, and has made a greater growth than common. The fly has done considerable damage, especially in the earlier sown.

Montgomery County, Ill.—Wheat looks better than for many years.

Franklin County, Ill.—Prospect for wheat never better, if we except a few fields afflicted by the fly.

Effingham County, Ill.—Hessian fly has done some injury.

Putnam County, Ill.—Winter wheat is looking unusually well, with increased area.

Edwards County, Ill.—Owing to the dry weather and the fly, late-sown wheat looks better than early sown.

Johnson County, Ind.—Early-sown wheat infested with the fly.

Warren County, Ind.—Wheat in uncertain condition. It is feared that the fly will take the crop.

Boone County, Ind.—Wheat is better grown than usual; crop covered finely with snow.

Mercer County, Ohio.—Wheat never in better condition ; covered with snow now.

Henry County, Ohio.—Wheat, acreage increased 20 per cent.; sown late, grown well, but not so forward as usual.

Noble County, Ohio.—Early-sown wheat injured by the fly.

Lake County, Ohio.—Early sown wheat not looking so well as that sown later.

Livingston County, Mich.—Wheat has too large a growth to be safe.

Clinton County, Mich.—Wheat very large; some fields injured by the Hessian fly.

Van Buren County, Mich.—Wheat, particularly the early-sown, injured by the fly.

Montcalm County, Mich.—Wheat has very large top.

Portage County, Wis.—Winter grain has been put in with more than usual care, and the only danger appears to be from large growth.

Outagamie County, Wis.—A wonderful growth of wheat; many fields fed down by stock. More care than usual in getting the crop in, especially on fallow ground.

Richland County, Wis.—Wheat seems to be injured by something. The under leaves turn yellow. Some say it is the fly. Some fields have been pastured.

Winona County, Minn.—Wheat exposed to winter-killing.

Goodhue County, Minn.—Large increase in acreage of winter wheat, owing to the success of the past two years. It has been sown on open ground, as well as in corn-fields.

Appanose County, Iowa.—Wheat injured by the chinch-bug.

Jefferson County, Kansas.—Double the acreage of last year in winter wheat.

Crawford County, Kansas.—Wheat in good condition, except early sown, which was injured by the army worm.

Leavenworth County, Kansas.—Wheat went into winter quarters in excellent condition.

Jackson County, Kansas.—Prospect never better for winter wheat.

Gage County, Neb.—Increased area in winter wheat. More would have been sown could seed have been procured conveniently.

Santa Clara County, Cal.—The continuance of the war in Europe and the advance in price of wheat are inducements for a largely increased acreage in cereals, the only drawback being the high price of seeds.

Mendocino County, Cal.—Farmers sadly behind in seeding, owing to the unfavorable season.

Stanislaus County, Cal.—Twenty per cent. increase in acreage of wheat and barley. Area in wheat estimated at 180,000 acres; barley, 40,000 acres.

San Luis Obispo County, Cal.—An increase of fifty per cent. is anticipated in acreage of cereal crops for the ensuing year.

Napa County, Cal.—Sowing much delayed for want of rain; at present the prospect of large acreage and yield is not flattering.

Linn County, Oreg.—Winter wheat sown two months later than usual, and one-third less in acreage. About fifty per cent. increase of land prepared for spring sowing.

San Pete County, Utah.—Decreased area in winter wheat, but the crop is in good condition.

COTTON.

Chattooga County, Ga.—A number of our planters have this year succeeded in raising a bale of cotton to the acre—the result of the use of fertilizers and careful cultivation.

De Soto County, Miss.—The winding up of the cotton crop shows our people generally "broke." Large cotton crop; low price; provisions all from Cincinnati and St. Louis.

Attala County, Miss.—Cotton crop of this county one-third larger than that of last year. The common expression is that one-third less cotton will be planted this year, but when planting time comes they will probably go cotton again.

Newton County, Miss.—Cotton has made an extraordinary yield, fully forty per cent. greater than last year.

Morehouse Parish, La.—Much of the cotton crop remains in the field, and will remain there, owing to the indisposition of the laborers to gather it.

Hardin County, Texas.—One hundred per cent. increase in the cotton crop of this county over the crop of 1863.

Milam County, Texas.—There are in this county about 20,000 acres in cotton that will yield 15,000 bales, and 10,000 acres that will yield 3,000 bales; 18,000 acres in corn, yielding 30 bushels to the acre; and 4,000 acres in promiscuous cultivation.

Anderson County, Texas.—Twenty per cent. of the cotton crop yet unpicked, and most of it will be lost; the best crop year in ten years, and with efficient labor planters would now abound in all the products of the latitude.

Rusk County, Texas.—Other crops have been neglected for several years past for cotton. Now that cotton has fallen in price it is thought more attention will be given the former. During the war wheat, rye, oats, barley, and rice were paying crops.

SUGAR-CANE.

Newton County, Miss.—Our planters are now raising the genuine Louisiana sugar-cane, and are meeting with great success. They make from four to eight barrels of sirup to the acre with the indifferent means at hand for crushing. Some are making sugar.

Iberia Parish, La.—Severe cold weather. A large quantity of seed-cane has been destroyed, and a few plantations have had their crops cut short by the heavy freeze. It is feared that the orange crop and trees have been killed.

Hardin County, Texas.—Four times as much sugar and molasses have been produced in this county this year as was made in 1868.

Jackson County, Fla.—The cane crop has turned out better than expected. The cane was small, but the juice was sweeter than usual, yielding one gallon of sirup to six of juice.

Manatee County, Fla.—A killing frost on Christmas day. Cane much injured. It is feared that the seed-cane is much damaged.

SORGHUM.

Mendocino County, Cal.—Sorghum is a new crop here. In a year or two it will be an important product in this county.

Surry County, Va.—Our sorghum has much deteriorated; now hardly worth cultivating. It is mixed with broom-corn.

Kendall County, Texas.—There has been a good yield of very superior golden-colored sirup from sorghum.

Jackson County, Kan.—The sorghum crop was light, owing to the drought.

EXTRACTS FROM CORRESPONDENCE.

THE TOUZELLE WHEAT.

Rockbridge County, Virginia.—The small packet of white winter Touzelle wheat you sent me last year I divided among our farmers here. They report their experiments unsatisfactory, in consequence of the unfavorable weather last summer, the excessive rains preventing the crop from maturing. I retained five ounces of the grain, which I sowed myself October 10, 1869, in drills, sixteen inches apart, dropping seed by hand four inches apart in the drill, one to three grains at a place, covering about one inch deep. The soil was a rich vegetable mold. It grew well, and in early spring I gave it a hand culturing. It looked too thin on the ground until it began to tiller; it then covered the whole surface, rendering it impossible to trace the rows. I counted as product of a single grain seventy-five heads, varying from one inch to five inches in length, with a number of short stalks without a head upon them. In fact, it seemed as if it would continue to send out new stalks perpetually. The promise was for a fair yield (I had sowed less than the tenth of an acre) of from two to three bushels of wheat. But the crop was entirely ruined by winds, rains, and hail, that beat the heads down to the earth and prevented their filling entirely.

THE EXCELSIOR OATS.

Poweshiek County, Iowa.—Last spring I sowed one and a half bushels of Excelsior oats (produced from Department seed of the preceding year) on rather less than half an acre of land; they grew quite tall, and yielded twenty-five bushels, forty pounds to the bushel. I value them very highly.

WHEAT IN THE SAN JOAQUIN VALLEY, CALIFORNIA.

Contra Costa County, Cal.—A correspondent reports that the staple of that immediate section is wheat. The soil is new, and until about three years ago was used solely for grazing purposes. Some one, more enterprising than his neighbors, sowed a few acres to wheat, and reaped a ton and a half to the acre. Before the summer was ended, every acre of Government and railroad land, as well as that claimed under Spanish titles, was located, and wheat raising became general. In some instances a yield of forty and fifty sacks was obtained. The following year was one of equal success, although the rain-fall was lighter, deeper plowing supplying the deficiency. The succeeding year was one of total failures. The custom is to dry-plow the land, harrow it, and sow the seed immediately after the first rains. It is proposed to summer fallow the land, and plow deep, when, it is hoped, an average crop will be produced, notwithstanding the drought, which seems to be periodical in that part of San Joaquin Valley.

PREVENTION OF SMUT IN WHEAT.

Stockton, California.—W. G. Phelps recommends the following method of preventing smut in wheat:

Fill a water trough, about twenty inches in height, with cold water sufficient to cover a sack of wheat when lying on the side. If the trough is wide enough to admit the sacks crosswise, with one man to assist in lifting out the sacks, the work may be done more expeditiously. Then dissolve sulphate of copper, commonly called "blue-stone," in hot

water in an iron pot, and as fast as it dissolves pour it into the water in the trough. Then crack a few grains of wheat and dip them in the water, and immediately take them out and lay them in the sun to dry. As soon as the blue color is perceivable on the cracked wheat the solution is sufficiently strong. Nail across one end of the trough strips of board to lay the sacks of wheat on to drain. Then lay in the sacks of wheat. My trough is sixteen feet long, and I lay in five sacks, and as soon as I lay in the fifth sack I take out the first one and lay it on the strips to drain. As soon as the sacks are drained the wheat may be sown. Otherwise, lay three strips of board on the floor and place the sacks of wheat on them. As soon as the tier is full lay strips on top of the sacks and another tier of sacks, and so on as high as desired. There is no danger of the wheat spoiling if under cover. It needs no rolling in lime or ashes. This course has not failed in fifteen years' trial with me. If everything is convenient, with one man to assist, you can prepare enough in a day to sow 1,000 acres. A person wishing to sow a small quantity can take a smaller trough or a barrel and dip the sack in, and take it out as soon as the water has penetrated every part of the sack. The main point is to have your solution strong enough, and take your wheat out as soon as every grain is touched by it.

THE CEREALS IN ARKANSAS.

Independence County, Arkansas.—Wheat, rye, and oats are planted in this section only on our very poorest lands. The great alluvial bottoms of the White River, running through the center of the county, are exclusively devoted to cotton. Prior to 1860 wheat was sometimes sown upon those lands, and the average product was not less than twenty-five bushels per acre. The universal failure of the cotton planters this season will probably induce them to appropriate more of these rich lands to grain-growing in the future. In that case the valley of the Upper White River of Arkansas will rival the Shenandoah and Genesee Valleys of the East.

GRAPES IN KENTUCKY.

Pine Grove, Clark County, Kentucky.—Doctor S. D. Martin gives an account of his experiments in cultivating different varieties of grapes. His land slopes gently toward the south, having a fall of about four feet in one hundred yards. The soil is rich, about two feet deep, and laying upon four feet of yellow, tenacious clay, which is underlaid with limestone. The vines on this ground have been growing from two to four years, being a year old when planted. The rows are eight feet apart, running nearly north and south with the slope of the hill, and the vines from four to eight feet apart in the rows. The ground has never had any other manure than that dropped by stock grazed or fed upon it. One row is planted with vines upwards of twenty years old—Isabella and Herbemont. The following summary of experiments is given :

Anna, a very slow grower, mildewed badly, produced a few sweet grapes; first crop.

Alvey, a fine healthy vine, yielded a good crop; first crop.

Agawam, Rogers's No. 15, mildewed badly, grapes rotted, not half a crop; first crop.

Concord, produced a heavy crop, no rot; second crop.

Crevelling, early and productive; first crop.

Clinton, bore a heavy crop, ripened well, except that a few vines lost their leaves; second crop.

Catawba, mildewed badly and rotted, half a crop of inferior grapes, some bitter; second crop.

Diana, mildewed, rotted, and ripened very unevenly.

Delaware, a slow grower, set a heavy crop, many vines lost their leaves and did not ripen; first crop.

Elsingburg, a fine, healthy vine, no rot; first year.

Goethe, bore a good crop of fine, large grapes, well ripened; first year.

Hartford, healthy and productive, bunches fine and large, no rot; first and second years.

Herbemont, bore a fair crop of delicious grapes, especially the young vines, the old vines rotted badly; first to twentieth years.

Ives, a strong grower, healthy and productive, large crop, ripened well; first year.

Isabella, a heavy crop, some ripened well, the roots of some destroyed by grub worms.

Israella, mildewed and rotted so badly as to lose nearly all its fruit; first year.

Iona, worse than the Israella, bringing very little fruit to perfection; first year.

Le Noir, produced less than half a crop, more than half the bunches shriveled before ripening; first year.

Lindley, many of the grapes mildewed and rotted, many of the grapes bitter; first year.

Lydia, a slow grower, has not yet borne fruit.

Mary Ann, a healthy vine, bore a few bunches, ripened well; first year.

Merrimac, mildewed and rotted; first year.

Norton, vine and fruit healthy, large crop, ripened well; first year.

Northern Muscadine, vigorous grower, vine and fruit healthy, large crop; first crop.

Perkins, vine and fruit healthy; first year.

Rogers's Hybrids, Nos. 2 and 33, both mildewed badly, and grapes rotted; those that did not rot ripened badly; first crop.

Rebecca, poor grower, vine unhealthy, killed to the ground some time in winter; no grapes.

Salem, very slow grower, vine healthy, produced a few bunches of fine grapes, ripened well; first crop.

Taylor, produced larger bunches and better grapes than usual; unproductive from second to eighth crop.

The first mildew on the vines was noticed May 31. On the 29th very damp fogs had prevailed. There were also fogs on the 2d, 3d, and 4th of June, the last very heavy. A caterpillar (*Procris Americana*) did much damage to the leaves of the vines, especially to the smooth ones of the Clinton, Delaware, Taylor, &c. Although thousands of these pests were killed, some of the vines were almost completely stripped of their leaves, in consequence of which the grapes did not ripen.

TOBACCO IN PENNSYLVANIA.

Bucks County, Pennsylvania.—In the lower section of the county the attention of farmers has been turned to raising tobacco, where it produces exceedingly remunerative crops; often \$500 per acre is realized on the sandy soil known as "Penn's manor." Almost every farm has been provided with a large frame building for drying purposes, which is generally paid for, and all other necessary expenses or outlay, by the product

of the first crop. Thus far parties have purchased the crop in the field at an average of about 25 cents per pound.

ACREAGE OF CROPS IN YORK COUNTY, MAINE.

York County, Maine.—I think the following estimates for this county are nearly correct: Total acreage of the county, 436,000; acres in fields, 109,000; acres plowed in 1870, 15,600; in grass, 93,000; in corn, 6,200; in potatoes, 2,600; in oats, 4,200; in wheat, 1,500; in rye, 350; in barley, 400; in buckwheat, 300.

THE CASTOR-BEAN IN CALIFORNIA.

The cultivation of the castor-bean in California is rapidly increasing. The amount raised this year will be quite large. One of the largest and most successful enterprises in this culture is that of Mr. Hedges, whose experiments are carried on in the vicinity of Marysville. Mr. Hedges has under cultivation this season about two hundred acres, and expects to realize about one hundred and twenty-five tons, all of the small "Illinois bean." The stalks of this variety vary in height from six to fifteen feet. The work of gathering begins in July and continues until the frosts set in. The drying grounds on this farm are described as large places cleared off to the "hard pan" of ground, and made smooth like a brick-yard. On this surface the heads or clusters of beans are laid in the sun, many of them having been picked in a green state, and here, as they dry, they open. When pretty well "snapped," the heaps are raked over and the beans removed and placed in a fanning-mill, whence they are transferred in a merchantable condition to the sack. Mr. Hedges utilizes the hulls as manure, and it is asserted that they operate to loosen as well as to enrich the clay soil of his farm. This gentleman finds the cultivation of the castor-bean so profitable that he purposes next season to plant three hundred acres.

JUTE.

Plaquemines Parish, Louisiana.—A farmer makes the following statement relative to the raising of jute in that section: "About the middle of May last I received from the Department of Agriculture two varieties of the jute seed, one from Calcutta, the other from the south of France. I planted on the first of June and sowed in drills sixteen inches apart. In a few days the plants appeared and grew rapidly. In three months the French jute grew *nine* feet, and the Calcutta over *ten*. The French specimens throw out numerous branches and a dense foliage, while the Calcutta has no branches and but few leaves. I believe this plant will thrive in lower Louisiana."

Cameron County, Texas.—On the 3d of May last I received from the Department jute seed from Calcutta and France. On the 7th I planted some of it on mesquit upland. It did not rain on the ground until September 19, and I had the seed watered to bring it up. It came up on the eighth day, and struggled along until November 16, when we had an unusually early frost. The plant in no case got over fourteen inches high. I send you one as a specimen. With good seasons I have no doubt the plant would grow well on our bottom lands, but the past season was a very severe one. We had slight rains in January; then none to more than lay the dust until April 25, after which, until September 19, no rain fell. I did not try to force its growth, for unless it will stand our climate, it will of course be of no benefit as a field crop.

Matagorda County, Texas.—I distributed the jute seed among our best planters, but it came too late and was planted when the plants should have been in bloom. The two varieties, French and India, are quite distinct. From what I see I much prefer the India, which grows more like hemp or flax, and has a pod about three or four inches long, growing on the stalk and limbs something like oca. The pod is full of seed, and in diameter the size of a man's little finger. The India plant grew on our sandy prairie soil, in a severe drought, five or six feet high, while the other kind, planted on strong bottom lands, grew ten or fifteen feet high. The latter throws off limbs and branches, and to my mind is objectionable on that account. Its seed grows in little buttons. I believe soil and climate here suit the plant. I made no efforts to gather the fiber, which will require experience and investigation.

IMPROVED CULTURE.

Marshall County, Ill.—We have come to the conclusion that for a series of years we have been skimming the cream off our land and throwing it away, and that we cannot make high-price farms pay except by a correct system of "high farming." We are now making all the improvements which our means will allow in a new system of cultivation.

RECLAIMED LANDS IN NEW JERSEY.

Hudson County, N. J.—The corn planted on the drained lands of this county did not produce as largely as anticipated; the grass choked it, and as the newly tilled land was stubborn and still wet in May and in July, the drought injured it. Yet they raised on an average sixty bushels per acre. (They say shelled corn, but I doubt it.) They have plowed a large number of acres this fall and kept at it until the 15th of December, and hope to do better next year. The oats sown on this new drained land grew too rank, and lodged badly, and the crop was a failure. The proprietors say they will try oats next season. Corn and grass are more certain to do well than any other crop until the land is thoroughly worked and sweetened.

USING CROPS ON THE FARM.

Marion County, Iowa.—Our correspondent, after referring to the low price of grain, &c., adds: "Our strength here is in raising as much corn and grass as possible, and then stock enough to consume the crops. The stock should be fed up to the best marketable condition where raised, in order to realize the greatest profit. Many sell their cattle and hogs as soon as fit for feeding, instead of feeding and selling them when ready for market eastward.

CLOVER AND TIMOTHY SEEDS.

Fond du Lac County, Wis.—We have a large amount of clover seed in our county, which is selling at \$5 per bushel; also much timothy seed, at \$3.

WINE PRODUCT OF HANCOCK COUNTY, ILLINOIS.

Hancock County, Ill.—Forty thousand gallons of wine have been made from the vintage of the past season. The grapes matured perfectly and have never before done so well. Large quantities of the product were sold for table use.

HOG AND CHICKEN CHOLERA.

Fairfax County, Va.—The hog cholera has been prevalent in many portions of the county. The loss from this cause may be safely stated

at 20 per cent. There has also been much loss among chickens and turkeys.

Jefferson County, W. Va.—The hog cholera has killed a few hogs in this county during the past year. About 300 fowls were killed by chicken cholera.

Laurens County, Ga.—Cholera is destroying hogs in some parts of the county.

Hickman County, Tenn.—Less hog cholera in the county than for many years.

Owsley County, Ky.—Several hogs lost from cholera. The disease acted differently from heretofore. The hogs died gradually.

PORK PACKED ON THE FARM.

Smith County, Tenn.—More hogs fattened in the county this year than for several years; only about half of them sold; the remainder packed at home.

Hickman County, Tenn.—Large surplus of pork has been packed.

De Kalb County, Mo.—The farmers are packing their hogs to a large extent. Some paid 7 to 8 cents for stock hogs and are selling the fattened hogs at 5 cents. One farmer purchased 18 head at 8 cents per pound, fattened and sold them, and had 56 cents over the cost of the stock hogs.

LIVE STOCK IN BOONE COUNTY, ILLINOIS.

Boone County, Ill.—The following table shows the number of live stock in this county, as returned by the assessors in 1868-'69-'70, compared with the census of 1860:

	1860.	1868.	1869.	1870.
Horses.....	4,711	6,093	6,465	6,438
Mules.....	14	100	98	106
Milch cows and other cattle.....	13,212	12,791	14,832	14,718
Sheep.....	7,185	28,101	24,008	19,531
Swine.....	4,972	7,191	5,679	6,754

STATISTICS OF WEST VIRGINIA.

Our correspondent in Jefferson County, West Virginia, submits estimates of the yield, acreage, price, and total value of the principal farm products of that county for the year 1870:

Name of product.	Acres to each.	Yield per acre.	Aggregate yield.	Price Jan. 1, 1871.	Total value.
Indian corn bushels.	21,835.	30.	655,050	\$0 52	\$340,626 00
Wheat.....do..	29,232.	8.5	248,472	1 30	323,013 60
Rye.....do..	1,084.	9.5	10,298	80	8,238 40
Oats.....do..	4,912.	18.5	90,872	40	36,348 80
Barley.....do..	10.	9.5	95	90	85 50
Buckwheat.....do..	70.	10.	700	1 00	700 00
Beans.....do..	8.	13.	104	2 75	286 00
Potatoes, (Irish).....do..	400.	70.	28,000	75	21,000 00
Potatoes, (sweet).....do..	2.5	60.	150	1 50	225 00
Turnips.....do..	10.	65.	650	50	325 00
Sorghum.....gallons.	32.	45.	1,440	75	1,080 00
Wine, (grape).....do..	10.	100.	1,000	2 05	2,050 00
Leaf tobacco....pounds.	10.	600.	6,000	12	720 00
Hay.....tons.	6,800.	1.28	8,604	14 00	120,456 00
Total.....	64,415.5	.....	.....	.....	855,154 30

The above table shows an increased acreage of nearly 4,000, and an increase of nearly \$45,000 in total value.

LIVE STOCK AT CHICAGO.

George T. Williams, assistant secretary, furnishes the following report of receipts and shipments of live stock at the Union Stock Yards, Chicago, Illinois, for the year ending December 31, 1870 :

RECEIPTS.

Source of supply.	Cattle.	Hogs.	Sheep.	Horses.
Chicago, Rock Island, and Pacific Railroad..	63,665	251,584	22,399	357
Illinois Central Railroad.....	87,915	379,513	89,597	289
Chicago, Burlington, and Quincy Railroad..	188,800	491,824	77,326	1,028
Chicago and Northwestern Railroad.....	101,417	338,707	107,761	1,148
Chicago and Alton Railroad.....	81,922	176,295	27,270	455
Pittsburg, Fort Wayne and Chicago Railroad..	296	3,493	1,118	54
Michigan Central Railroad.....	2,786	19,423	6,281	76
Michigan Southern Railroad.....	670	20,964	11,880	107
Pittsburg, Cincinnati, and St. Louis Railroad.	2,805	10,686	3,212	23
Driven into the yards.....	2,688	669	3,011	.....
Total in 1870.....	532,964	1,693,158	349,855	3,537
Total in 1869.....	403,102	1,661,869	340,072	1,524

SHIPMENTS.

	Cattle.	Hogs.	Sheep.	Horses.
Pittsburg, Fort Wayne, and Chicago R. R..	129,885	299,356	40,047	717
Michigan Central Railroad.....	110,404	170,764	61,592	363
Michigan Southern Railroad.....	118,142	448,965	12,552	1,010
Pittsburg, Cincinnati, and St. Louis R. R..	4,952	1,181	189	77
Chicago, Rock Island, and Pacific Railroad..	3,308	365	488	390
Illinois Central Railroad.....	8,063	547	230	18
Chicago, Burlington, and Quincy R. R.....	2,441	412	899	52
Chicago and Northwestern Railroad.....	3,355	2,737	561	736
Chicago and Alton Railroad.....	11,159	126	153	125
Total in 1870.....	391,709	924,453	116,711	3,488
Total in 1869.....	294,717	1,086,305	108,690	1,538

MARKET PRICES OF FARM PRODUCTS FOR DECEMBER, 1870, AND JANUARY, 1871.

[Record made as near the first of the month as practicable.]

Products.	December.	January.
NEW YORK.		
Flour—State*.....per barrel..	\$4 90 to \$6 20	\$5 35 to \$6 65
Western.....do.....	4 90 to 8 25	5 35 to 8 25
Wheat—No. 1 spring.....per bushel..	1 27½ to 1 28	1 41 to 1 43
No. 2 spring.....do.....	1 33½ to 1 34	1 27 to 1 28
Winter and amber western.....do.....	1 41 to 1 45	1 46 to 1 48
Corn—New western mixed.....do.....	75 to 82	76 to 77

*Including "St. Louis extra." †Old and new spring mixed. ‡New spring.

Market prices of farm products, &c.—Continued.

Products.	December.		January.	
NEW YORK—Continued.				
Corn—Old western mixed.....per bushel..	\$0 86	to \$0 88	—	to —
Rye.....do.....	95	to 1 06	\$0 90	to \$1 05
Barley.....do.....	90	to 1 12	78	to 1 10
Oats—Western mixed.....do.....	60	to 61	60	to 62
State.....do.....	60	to 62	60	to 61½
Hay—Shipping qualities.....per ton..	21 00	to 22 00	23 00	to 24 00
Prime.....do.....	—	to —	24 00	to 27 00
Pork—Mess.....per barrel.....	23 00	to 23 50	19 25	to 19 50
Prime mess.....do.....	21 50	to 22 50	20 00	to 21 00
Beef—Mess.....do.....	10 00	to 15 00	10 00	to 15 00
Extra.....do.....	15 00	to 18 00	15 00	to 18 00
Lard.....per pound.....	12½	to 13½	11½	to 12½
Butter—Western.....do.....	14	to 30	12	to 25
State.....do.....	20	to 45	20	to 45
Cheese—Dairy.....do.....	7	to 14	7	to 14
Factory.....do.....	10	to 16	13	to 16½
Cotton—Ordinary.....do.....	13½	to 13¾	12½	to 13½
Middling.....do.....	16½	to 16¾	15½	to 16
Tobacco—Sound lugs, light grades.....do.....	7	to 7½	7	to 7½
heavy grades.....do.....	8	to 8½	8	to 8½
Common leaf, light grades.....do.....	7¾	to 8½	7¾	to 8½
heavy grades.....do.....	9	to 9½	9	to 9½
Wool—Combing fleece.....do.....	53	to 58	53	to 58
Extra pulled.....do.....	38	to 42	38	to 42
Texas common to medium.....do.....	30	to 33	30	to 33
California, common.....do.....	26	to 28	20	to 23
CHICAGO.				
Flour—Winter extras.....per barrel..	4 75	to 7 50	5 00	to 7 50
Spring extras.....do.....	4 25	to 5 75	4 25	to 6 00
Wheat—No. 1 spring.....per bushel..	1 03½	to 1 04	1 08½	to 1 11
No. 2 spring.....do.....	1 01¾	to 1 03½	95	to 1 11
No. 3 spring.....do.....	98½	to 1 00	88	to 1 05
Corn—No. 2.....do.....	58	to 62	42½	to 44
Rejected.....do.....	45	to 46	—	to —
No grade.....do.....	42	to 44	41	to 43
Rye—No. 1.....do.....	71	to —	72	to 76
No. 2.....do.....	69	to 70	70	to 75
Rejected.....do.....	63	to 65	65	to 70
Barley—No. 2.....do.....	80	to —	68	to 75
No. 3.....do.....	67	to 69	53	to 54
Rejected.....do.....	50	to —	40	to 45
Oats—No. 2.....do.....	39½	to 40½	38½	to 39½
Rejected.....do.....	35½	to —	36½	to 37½
Hay—Timothy and clover (on track).....per ton..	16 00	to 18 00	16 00	to 18 00
Prairie.....do.....	11 00	to 15 00	10 00	to 18 00
Pork—Mess.....per barrel.....	19 25	to 19 50	18 12½	to 18 25
Prime mess.....do.....	18 75	to 19 00	17 50	to 17 75
Beef—Mess.....do.....	10 00	to 11 25	11 00	to —
Extra mess.....do.....	13 00	to 13 25	13 00	to —
Lard.....per pound.....	12	to 12½	11½	to 11½
Butter—Firkin and tub.....do.....	11	to 27	9	to 15
Extra.....do.....	—	to —	22	to 28
Cheese—New York factory.....do.....	15½	to 16½	14	to 15
Western factory.....do.....	13	to 14	—	to —
Western reserve.....do.....	13	to 14	—	to —
Wool—Medium fleece.....do.....	33	to 42	35	to 40
Unwashed, medium.....do.....	27	to 30	25	to 27
Tub.....do.....	45	to 50	42	to 48
CINCINNATI.				
Flour—Family.....per barrel..	5 50	to 5 75	5 60	to 5 65
Extra.....do.....	5 25	to 5 50	5 25	to 5 35

Market prices of farm products, &c.—Continued.

Products.	December.		January.	
CINCINNATI—Continued.				
Flour—Superfine.....per barrel..	\$4 25	to \$4 50	\$4 25	to \$4 50
Low grades.....do.....	3 75	to 4 00	3 75	to 4 00
Wheat—No. 1 white.....per bushel..	1 20	to 1 23	1 20	to 1 35
No. 2 white.....do.....		to		to
No. 1 red.....do.....	1 17	to 1 19	1 16	to 1 17
No. 2 red.....do.....	1 16	to	1 14	to 1 15
Corn—No. 1.....do.....	50	to 52	53	to 54
New ear.....do.....	50	to 52	53	to 54
Rye—No. 1.....do.....	86	to	83	to
No. 2.....do.....	83	to	81	to
Rejected.....do.....	78	to	78	to
Barley—No. 1.....do.....	1 08	to 1 10	95	to 1 00
No. 1 State.....do.....	1 00	to 1 05		to
Oats—No. 1 mixed.....do.....	42	to 44	42	to 43
No. 2 mixed.....do.....	37	to 39	40	to 42
Hay—Light pressed.....per ton..	19 00	to 22 00	17 00	to 20 00
Loose pressed.....do.....	20 00	to 24 00	19 00	to 23 00
Pork—Mess.....per barrel..	19 00	to 19 25	19 00	to
Prime mess.....do.....		to		to
Lard—Prime steam.....per pound..	11 $\frac{5}{8}$	to 11 $\frac{3}{4}$	10 $\frac{5}{8}$	to 10 $\frac{3}{4}$
Butter—Choice Ohio.....do.....	28	to 30	26	to 28
Fair to good.....do.....	20	to 24		to
Cheese—Western reserve.....do.....	14	to 14 $\frac{1}{2}$	13 $\frac{1}{2}$	to 14 $\frac{1}{2}$
Factory.....do.....	15	to 15 $\frac{1}{2}$	14 $\frac{1}{2}$	to 15 $\frac{1}{2}$
Cotton—Ordinary.....do.....		to 12 $\frac{1}{2}$	12	to
Middling.....do.....		to 15 $\frac{1}{2}$	14	to 14 $\frac{1}{2}$
Tobacco—Lugs, West Virginia.....do.....	6 $\frac{1}{2}$	to 8	6 $\frac{1}{2}$	to 8
Lugs, Kentucky.....do.....	7	to 9 $\frac{1}{2}$	7	to 10
Common to medium leaf, West Virginia.....do.....	8	to 13	8	to 12
Common to medium leaf, Kentucky.....do.....	10	to 15	10	to 18
Wool—Tub-washed.....do.....	45	to 48	45	to 48
Fleece-washed.....do.....	40	to 45	40	to 45
Unwashed.....do.....	30	to 35	30	to 35
Pulled.....do.....	31	to 32	31	to 32
ST. LOUIS.				
Flour—Superfine.....per barrel..	4 20	to 4 60	4 20	to 4 60
Spring.....do.....	4 25	to 4 75	3 25	to 5 00
Choice.....do.....	7 00	to 7 50	6 50	to 7 25
Wheat—Spring.....per bushel..	1 05	to 1 10	1 05	to 1 10
Winter No. 1.....do.....	1 30	to	1 37	to
Winter No. 2.....do.....	1 26	to 1 28	1 23	to
Winter No. 3.....do.....	1 07	to 1 18		to
Red.....do.....	1 15	to 1 37 $\frac{1}{2}$	1 12	to 1 25
Corn—Mixed.....do.....	52	to 53	55	to 56
Yellow.....do.....	52	to 53	55	to 57
Rye.....do.....	83	to	75	to 78
Barley—Winter.....do.....	80	to	1 00	to 1 05
Spring.....do.....		to		to
Oats—Mixed.....do.....	43	to 43 $\frac{1}{2}$	44	to 45
White.....do.....	44	to 45	45	to 46
Hay.....per ton..	18 00	to 19 50	16 00	to 18 50
Pork—Mess.....per barrel..	19 00	to 19 50	19 00	to 19 50
Lard—Tierce.....per pound..	11 $\frac{1}{4}$	to 11 $\frac{3}{4}$	11	to 12
Keg.....do.....	13	to 13 $\frac{1}{2}$	13	to 13 $\frac{1}{2}$
Butter—Choice.....do.....	30	to 32	30	to 32
Fair to medium.....do.....	17	to 25	20	to 25
Cheese—Factory.....do.....	15 $\frac{1}{2}$	to 16 $\frac{1}{2}$	15 $\frac{1}{2}$	to 16 $\frac{1}{2}$

Market prices of farm products, &c.—Continued.

Products.	December.		January.	
St. Louis—Continued.				
Cotton—Middling.....per pound..	\$0 13 $\frac{3}{4}$	to	\$0 13 $\frac{1}{2}$	to \$0 14
Tobacco—Sound lugs.....do.....	5	to \$0 8	5	to 6 $\frac{1}{2}$
Common leaf.....do.....	7 $\frac{1}{2}$	to 8 $\frac{1}{2}$	7 $\frac{1}{2}$	to 8 $\frac{1}{2}$
Medium leaf.....do.....	8 $\frac{3}{4}$	to 9 $\frac{1}{2}$	8 $\frac{3}{4}$	to 9 $\frac{1}{2}$
Wool—Tub-washed.....do.....	40	to 48	40	to 48
Fleece-washed, (accord to grade).do.....	30	to 41	31	to 41
Combing.....do.....	35	to 36	35	to 36
Pulled.....do.....	30	to 33	30	to 33
NEW ORLEANS.				
Flour—Superfine.....per barrel..	4 75	to 5 00	5 50	to 5 75
Extras, (according to grade).....do.....	5 75	to 8 00	5 80	to 8 00
Corn—Mixed.....per bushel..	70	to	69	to
Yellow.....do.....	77 $\frac{1}{2}$	to	69	to 70
White.....do.....	65	to 73	69	to 70
Oats—Choice.....do.....	50	to 52	54	to 56
Hay—Choice.....per ton..	30 00	to	30 00	to 32 00
Prime.....do.....	28 50	to 29 00	32 00	to
Pork—Mess.....per barrel..	22 00	to	21 00	to 21 50
Lard—Tierce.....per pound..	13 $\frac{1}{2}$	to 14	12 $\frac{1}{2}$	to 12 $\frac{3}{4}$
Keg.....do.....	14	to	13 $\frac{1}{2}$	to 14 $\frac{1}{2}$
Butter—Choice Western.....do.....	32	to 34	30	to 32
Choice Northern.....do.....	43	to 45	42	to 44
Common Northern.....do.....	30	to 35	30	to 35
Cheese—Choice factory.....do.....	15	to 16	15 $\frac{1}{2}$	to 16 $\frac{1}{2}$
Western reserve.....do.....	13	to 14	14	to 14 $\frac{1}{2}$
Cotton—Ordinary.....do.....	12 $\frac{1}{2}$	to 13 $\frac{1}{2}$	12	to 12 $\frac{1}{2}$
Low middling.....do.....	13 $\frac{3}{8}$	to 14 $\frac{5}{8}$	13 $\frac{1}{2}$	to 14 $\frac{1}{2}$
Middling.....do.....	15 $\frac{3}{8}$	to 15 $\frac{1}{2}$	14 $\frac{3}{8}$	to 14 $\frac{5}{8}$
Tobacco—Lugs, light.....do.....	5 $\frac{1}{2}$	to 6 $\frac{1}{2}$	5 $\frac{1}{2}$	to 6 $\frac{1}{2}$
Lugs, heavy.....do.....	6 $\frac{1}{2}$	to 7	6 $\frac{1}{2}$	to 7
Low leaf, light.....do.....	6 $\frac{1}{4}$	to 7 $\frac{1}{2}$	6 $\frac{1}{4}$	to 7 $\frac{1}{2}$
Low leaf, heavy.....do.....	7	to 8	7	to 8
Medium leaf, light.....do.....	7 $\frac{1}{2}$	to 8	7 $\frac{1}{2}$	to 8
Medium leaf, heavy.....do.....	8	to 8 $\frac{1}{2}$	8	to 8 $\frac{1}{2}$
SAN FRANCISCO.				
Flour—State.....per barrel..	5 25	to 6 50	5 25	to 6 50
Oregon.....do.....	5 25	to 6 50	5 25	to 6 50
Wheat—State.....per bushel..	1 85	to 2 12 $\frac{1}{2}$	2 00	to 2 30
Oregon.....do.....	2 05	to 2 12 $\frac{1}{2}$	2 25	to 2 30
Corn—White.....do.....	1 35	to	1 50	to 1 60
Yellow.....do.....	1 35	to	1 50	to 1 60
Barley.....do.....	1 20	to 1 35	1 40	to 1 45
Oats.....do.....	1 25	to 1 50	1 40	to 1 60
Hay—State.....per ton..	10 00	to 14 00	12 00	to 16 00
Pork—Mess.....per barrel..	24 00	to	24 00	to
Prime.....do.....	21 00	to 23 00	21 00	to 22 50
Beef—Mess.....per barrel..	18 00	to 20 00	18 00	to 20 00
Lard—In barrels.....per pound..	13	to 14	12 $\frac{1}{2}$	to 13
Domestic.....do.....	11	to 12	11	to 12
Butter—State.....do.....	40	to 60	40	to 55
Oregon.....do.....	15	to 25	15	to 25
Overland.....do.....	25	to 35	25	to 35
Cheese.....do.....	12	to 17	12	to 17
Wool—Native.....do.....	13	to 14	13	to 14
Californian.....do.....	15	to 18 $\frac{1}{2}$	15	to 18 $\frac{1}{2}$
Oregon.....do.....	24	to 25	24	to 25

NEW YORK HAY MARKET.

The following is a comparison of the prices of hay and straw in the New York market for the past three years :

	Sept. 30, 1867.	Sept. 30, 1868.	Sept. 30, 1869.	Sept. 30, 1870.
Shipping hay....	\$0 75	\$0 70	\$0 65	\$1 00
Retail hay.....	\$1 30 to 1 45	\$1 25 to 1 40	1 15	\$1 20 to 1 35
Long straw.....	90 to 95	1 00 to 1 05	\$0 90 to 95	1 00 to 1 10
Short straw.....	70 to 75	85 to 90	75 to 80	80 to 90
Oat straw.....	75 to 80	85 to 90	60 to 75	70 to 80

THE NORTH AMERICAN DESERT FLORA BETWEEN 32° AND 42°, NORTH LATITUDE.

The following paper was read at the meeting (1870) of the British Association at Liverpool, England, by C. C. Parry, M. D., the botanist of this Department:

The desert tracts of North America, as at present defined by our recent geographical knowledge, comprise those interior basins of greater or less extent shut in by mountain ranges from the influence of the moist oceanic currents. These well-marked districts, while presenting certain diversities of soil corresponding to particular geological conditions, everywhere characterized by an arid climate, irregular and scanty rainy seasons, and wide extremes of heat and cold, both diurnal and annual. The permanent water-courses of this region, having their distant sources in snow-clad summits, traverse a succession of basins, presenting occasional alluvial belts bounded by elevated and abrupt table-land, which latter is mainly composed of beds of coarse gravel or drifting sand. The intervening ridges forming the basin rims are cut through by those deep chasms known as cañons.

The local drainage, not connected with the main valleys, terminates rather in salt lakes or saline flats, the intense evaporation being sufficient to carry off the superficial supply of water, leaving their soluble mineral contents to be concentrated in the lower depressions. The intervening rocky ridges and isolated mountain peaks, when not of sufficient elevation to act as condensers of the upper currents of the atmosphere, exhibit the same characters of arid vegetation, though comprising a larger proportion of shrubbery and dwarf-tree growth.

In attempting an enumeration of North American desert plants, my aim has been not so much completeness of detail as to exhibit the main features of desert vegetation, as here brought to view, and to afford the means of comparison with corresponding districts in other portions of the earth. One of the most striking features of the desert flora may be noted in the very marked distinction between the annual and perennial vegetation. Thus, the annual desert plants, whose period of growth is strictly confined to a short and uncertain period of spring or fall rains, require for their continued preservation a safe deposit for their usually minute seeds during the prolonged dry season. This condition is, in great measure, supplied by the porous sandy and gravelly soil, or rock crevices, into which they fall and are safely buried, not only out of the reach of climatic influences, but also safe from destruction by animals. Their growth is necessarily rapid and evanescent, and no sooner do warm rains moisten the ground than they spring forth from their hiding places and clothe the barren soil with their scanty verdure, rapidly flower and mature their seeds, which are again deposited in the earth, while their slight evanescent forms dry up and are blown away, hardly leaving any visible trace of their existence. These characteristics are plainly exhibited in ordinary herbarium specimens, and are further exemplified in the specific name of "exile," so often very appropriately applied. On the other hand, the perennial desert plants either store up a large amount of surplus nourishment in their thick, tuberous, or tap roots; or, in the case of trees and shrubs, present exposed stems and foliage of the most scant and starved character. Spine-clad branches and green-barked stems are, in many instances, made to supply the office of leaves, or where these latter are present, they are often thickly coated with resinous varnish, or clothed with tomentose hairs or scales, serving, in either case, to check evaporation, and thus limit the usual processes of growth. The preservation of species in perennial plants being less dependent than in annuals on the production of seeds, these are generally scanty, often mature late, and

are frequently protected by hard or spiny envelopes. In certain cases, especially among cactuses, proliferous shoots, easily detached and quickly rooting, serve the purpose of seeds in providing for the continuance and distribution of species; and in such instances the very remarkable and significant fact may be noted, that the fruits generally prove abortive, or even revert to the condition of proliferous shoots.

In the accompanying list a great disproportion in the representation of different natural orders and of particular genera is very plainly exhibited, and there is complete absence of some orders and genera usually represented in northern temperate climates.

The list contains 183 species. Dicotyledons are represented by 169 species, included in 48 natural orders and 144 genera; and monocotyledons include 19 species, comprised in 4 natural orders and 10 genera. The natural order *Composite* possesses the largest number of species, viz: 44, or nearly one-fourth of the whole phanerogamic flora. Leguminosæ (which includes most of the dwarf trees and larger shrubs) comes next in point of number, with 25 species. Other prevalent natural orders are variously represented. Of the lower orders (which are not included in the following list) lichens only are fairly represented.

Myosurus minimus, L.
Berberis trifoliata, Moricand.
Argemone mexicana, L.
Eschscholtzia Douglasii, Hook.
Corydalis aurea, Willd.
Sisymbrium canescens, Nutt.
Vesicaria Fendleri, Gray.
V. argyrea, Gray.
Dithyrea californica, Har.
Lepidium flavum, Gray.
L. Wrightii, Gray.
L. alyssoides, Gray.
Cleomella angustifolia, Torr. —
C. longipes, Torr.
Cleome Sonora, Gray.
Polanisia uniglandulosa, DC.
Sesuvium Portulacastrum, L.
Levisia rediviva, Pursh.
L. Brachycarpa, Engel.
Fouquieria splendens, Eng.
Malvastrum exile, Gray.
M. coccineum, Gray.
M. Moureaum, Gray.
Hibiscus denudatus, Bth.
Larrea mexicana, Moric.
Kallstroemia maxima, Torr. et Gray.
K. grandiflora, T. et G.
Cevallia sinuata, Lag.
Petalonyx Thurberi, G.
Mentzelia albicaulis, Dgl.
M. Multiflora, Nutt.
Eucnide lobata, Gray.
Cucurbita digitata, Gray.
Apodanthera undulata, Gray.
Mamillaria phellosperma, Engel.
M. Grahami, Engel.
Echinocactus Wislizeni, Engel.
E. horazonthaloni, Engel.
Cereus dasyacanthus, Eng.
C. Stramineus, Engel.
C. Engelmanni, Parry.
C. Giganteus, Engel.
Opuntia basilaris, Engel.
O. Emoryi, Engel.
O. Whipplei, Engel.
O. arboreus, Engel.
O. Parryi, Engel.
O. tessellata, Engel.
O. Arbuscula, Engel.
O. Bigelovii, Engel.
O. Davisii, Engel.
Pectis ilipes, Harv. et G.
P. longipes, Gray.
P. imberbis, Gray.
P. papposa, Harvey et G.
Carpophorus juncus, Bth.
Nama Jamaicensis, L.
Phacelia micrantha, Torr.
Gilia anrea, Nutt.
Navarretia Schottii, Torr.
Ipomoea leptophylla, Torr.
Evolvulus argenteus, Psh.
Nicotiana quadrivalvis, Pursh.
Physalis cardiophylla, T. et G.
Lycium pallidum, Miers.
Amsonia tomentosa, T.
Asclepias subulata, Dne.

Thamnosma montanum, Torr.
Rhus microphylla, Engel.
Glossopetalon spinescens, Gray.
Rhamnus croceus, Nutt.
Ceanothus Fendleri, Gr.
Zizyphus Parryi, Torr.
Condalia spathulata, Gr.
Microthamnus ericoides, Gray.
Karwinskia Humboldtiana, Zucc.
Adolphia infesta, Meisn.
Janusia gracilis, Gray.
Holacantha Emoryi, Gr.
Canotia holacantha, Torr. et Gray.
Polygala scoparia, H. B. K.
P. Lindheimeri, Gray.
P. Puberula, Gray.
P. Xantii, Gray.
Krameria parvifolia, Bth.
K. canescens, Gray.
Dalea spinosa, Gray.
D. Emoryi, Gray.
D. Fremontii, T. et G.
D. Schottii, Gray.
D. divaricata, Benth.
Dalea scoparia, Gray.
D. lanata, Spreng.
Petalostemon exile, G.
Machæranthera tanacetifolia,
 Nees.
Eremiastrium belloides, Gray.
Aphamostephus ramosissimus,
 DC.
Gymnosperma corymbosa, DC.
Gutierrezia Euthamiae, T. et G.
Linosyris graveolens, Torr. et G.
Aplopappus spinulosus, DC.
Perilyte nuda, Torr.
P. Emoryi, Torr. et G.
Baccharis Emoryi, Torr. et G.
B. sergiloides, T. et G.
Melampodium cinereum, DC.
Dicoria canescens, T. et G.
Franseria dumosa, Gray.
F. deltoidea, Torr.
Flourensia ceruina, DC.
Encelia conspersa, Bth.
E. nivea, Benth.
Simsia canescens, Gray.
S. frutescens, Gray.
Hymenanthemum acerorum, Gray.
H. pentactatum, DC.
Nicoletia Edwardsii, Gr.
Porophyllum scoparium, Gray.
Palatofia linearis, Lag.
Bahia rubella, Gray.
B. bitermata, Gray.
E. cordatum, Torr.
E. Abertianum, Torr.
Chorizanthe breviorum, Torr.
Acanthogonum rigidum, Torr.
Centrostegia Thurberi, G.
Achyrocnichia Cooperi, G.
Acauthochiton Wrightii, Torr.
Sarratia Berlandieri, Moq.
Guillemina densa, Moq.
Alternanthera lanuginosa, Torr.
Obione canescens, Moq.

A. Nuttallianus, Gray.
A. Fremontii, T. et G.
Lupinus pusillus, Petrs.
Sophora sericea, Nutt.
Hoffmanseggia microphylla, Torr.
H. drepanocarpa, Gray.
Cercidium floridum, Bth.
Cassia baubinioides, G.
C. Pumilio, Gray.
Parkinsonia microphylla, Torr.
Algarobia glandulosa, Torr. et G.
Mimosa Lindheimeri, G.
Acacia Greggii, Gray.
A. constricta, Benth.
A. Schottii, Torr.
Prunus minutiflora, Eng.
Cercocarpus parvifolius, Nutt.
Cowanja mexicana, Don.
Fallugia paradoxa, Torr.
Purshia tridentata, DC.
Ecnothera albicaulis, Nutt.
E. chamænerioides, G.
E. claviformis, Torr.
E. cardiophylla, Torr.
E. brevipes, Torr.
E. dentata, Cav.
Burelia lanosa, Gray.
Trichoptilium incisum, G.
Baileya pauciradiata, G.
B. pleniradiata, H. et G.
Artemisia tridentata, Psh.
A. filifolia, Torr.
Psathyrotes annua, Gray.
P. scaposa, Gray.
Senecio longilobus, Bth.
Rafinesquia neo-mexicana, Gray.
Lygodesmia juncea, DC.
Stephanomeria minor, Nutt.
Nemacladus ramosissimus, Nutt.
Plantago patagonica, Jacq. var.
Chilopsis linearis, D. C.
Martynia arenaria, Engel.
Manrandia Wislizeni, Engel.
Pentstemon ambigans, T.
P. puniceus, Torr.
Castilleja affinis, Hook.
Mohavea viscida, T. et G.
Sericographis californica, Gray.
Hyptis Emoryi, T. et G.
Salazaria mexicana, Torr.
Traclea Conlteri, Gray.
Tigulia brevifolia, Nutt.
Eritrichium micranthum, Torr.
Pectocarya linearis, DC.
Amsinchia spectabilis, Fisch. et
 Mey.
Ephedra antisiphilitica, Berland.
Juniperus tetragona, Schl.
J. occidentalis, Hook.
Agave americana, L.
A. lecheguilla, Torr.
A. geminiflora, Gawl.
A. parviflora, Torr.
Dasyliroon granitiformis, Zucc.
D. Bigelovii, Torr.
Hesperocallis undulata, G.
Yucca angustifolia, Psh.

Selinocarpus angustifolius, Torr.
et G.
S. diffusus, Gray.
Boerhaavia erecta, L.
B. eriodelina, Gray.
Abronia mellifera, Dougl.
A. cyclopetra, Gray.
A. fragrans, Nutt.
Eriogonum fasciculatum, Benth.
E. gracile, Benth.
E. vimineum, Dougl.
☉. hymenelytra, Torr.

O. Occidentalis, Moq.
Corispermum hyssopifolium, L.
Sarcobatis vermicularis, Nees.
Phoradendron californicum, Nutt.
Euphorbia albo-marginata, Torr.
Croton procumbens, Esch.
Aphora serrata, Engel.
Mozinna cardiophylla, Engel.
Pilosyles Thurberi, G.
Hosackia puberula, Bth.
Astragalus Missouriensis, Nutt.

Y. stenophylla, Eng. ined.
Y. brevifolia, Eng. ined.
Y. baccata, Torr.
Aristida purpurascens, Poir.
Pappophorum boreale, Led.
Bouteloua oligostachya, Nutt.
B. eriopoda, Torr.
B. polystachya, Benth.
Chloris alba, Presl.
Tripsis pulchella, Kth.
Brizopyrum spicatum, Hook.

CULTIVATION OF THE PLAINS.

Mr. R. S. Elliott, agent of the industrial department of the Kansas Pacific Railway, has been making experiments in the cultivation of the unirrigated plains at Wilson, 236 miles west of the State line of Missouri, and 1,586 feet above the level of the sea; at Ellis, 302 miles west of the State line, and 2,019 feet above the sea; at Pond Creek, 422 miles west of State line, and 3,175 feet above the sea. These plantations are west of the limits heretofore assumed by most meteorologists as the limit of cultivation, except by the aid of irrigation. Only a few acres of ground were broken at each place on account of the lateness of the season when the work was begun. After one plowing and a slight harrowing the seeds were sown.

At Pond Creek, on the 26th of September, 1870, were sown 4 acres of wheat, 3 acres rye, 2 acres barley, timothy sown on the wheat. On the 14th of November, lucerne was sown across the wheat, rye, and barley. At Ellis were sown, on the 20th of October, wheat three acres, rye 3 acres, barley 1 acre. On the 22d of the same month 3 quarts of Touzelle wheat and 3 quarts of Scotch rye, furnished by this Department, were sown, and on the 24th, Italian rye grass, lucerne, northern lucerne, province lucerne, Alsike clover, sainfoin, seradilla, vetches, vetchlings, and perennial rye grass, also from this Department. On the 12th of November a few nuts and tree seeds were planted at Wilson, burr-oak, pecan, chestnut, peach, and ailanthus. Mr. Elliott says:

The experiment, without irrigation, at Pond Creek, 120 miles beyond Ellis, and on the extreme western border of the State of Kansas, in the very midst of the dry plains, and in a soil to be classed with the least promising on the line of your road, is the most interesting and important. The location is near the 102d degree of west longitude, four degrees west of the limit of arable effort, depending on rain-fall alone, as heretofore assigned by eminent meteorologists. Boldly, but not unwisely, you have invaded the "desert," not only with the iron rail, but the plow and harrow as well; and success, under circumstances heretofore believed to forbid it, will prove the wisdom of your order to make the trial; and it will also establish a new value for millions of acres of lands heretofore regarded as worthless except for limited grazing resources in favored portions. Even with the first trial I have no doubt of success. A second trial, with better culture and a decomposed sod, will yield larger results, but will not more clearly illustrate the favorable climatic conditions and the strength of the soil.

Relative to tree growth on the plains, Mr. Elliott lays down these propositions: 1. Forests can be established in all parts of the plains, even without artificial irrigation. 2. Much deeper plowing will be required than for winter grains or forage plants. 3. The most rapid growers are the beech trees for first planting. 4. Planting seed is better than transplanting young trees.

The ailanthus seeds sent by this Department to Ellsworth County, Kansas, last spring, have been tried by several farmers with very favorable results. The little trees now in Ellsworth County are "the talk of the county." Mr. Elliott is satisfied that there is no tree seed so valuable as this for that part of the country.

SCIENTIFIC NOTES.

SULPHATE OF MAGNESIA AS A MANURE.

The accumulation of sulphate of magnesia, or epsom salts, as a waste product at a mineral-water establishment in Königsberg, where it is offered for sale at about 15 cents per hundred weight, has suggested its use for agricultural purposes, as its constituents enter largely into the composition of most vegetable substances. Magnesia, especially, is found in considerable quantity in the seeds of various cultivated plants, and especially in corn, &c. The experiment has already been tried of applying the sulphate of magnesia to one part of the field, and the sulphate of lime, or gypsum, to the other; and, according to Professor Goltz, it is stated that in the case of clover especially, the difference was very markedly in favor of the magnesia, although the general nature of its agency appears to be quite similar to that of the gypsum. Both seem particularly valuable in this connection, on account of entering directly into the composition of the plant instead of requiring a certain transformation before being taken up. The sulphate of magnesia, as stated by Professor Goltz, has a perhaps still more important application in the stable, acting like gypsum in retarding the decomposition of the manure, and fixing the ammonia developed from it. The sulphate of magnesia, however, acts more quickly and energetically than gypsum, in consequence of being very soluble in water; quite the contrary being the case with gypsum. From the preceding considerations, therefore, it is inferred that sulphate of magnesia is quite equal to gypsum as a fertilizer, and decidedly superior for use in stables. From one pound to one and a half pounds per day, per head, will suffice for the latter object, or from four to five hundred weight per annum. The cost in the vicinity of Königsberg being less than one-half that of gypsum, is an important point in favor of the epsom salt.

CONSTITUENTS OF THE MILK OF DIFFERENT ANIMALS.

From a late examination of different kinds of milk, with reference to their solid constituents, it has been ascertained that asses' milk is most diluted, containing scarcely 9 per cent. of solid matter. Next comes human milk, with somewhat over 11 per cent., while mares' milk contains 17 per cent. The average is seen in the milk of the goat and of the cow. In reference to the percentage of casein and albumen, human milk is poorest, containing only 4 per cent. of casein; cows' milk nearly 5 per cent., with more than one-half per cent. of albumen. Again, goats' milk, with nearly 6 per cent. of casein and albumen, as far as known, has a larger amount of albumen than that of any other mammal. The smallest quantity of butter is found in asses' milk; that of the goat containing the largest, or nearly 7 per cent. Sheeps' milk is most nutritious, as it contains $11\frac{1}{4}$ per cent. of protein matters and hydrocarbons; and while the milk of the cow contains only about 4 per cent. of milk sugar, that of the mare has 8 per cent., which renders it very prone to alcoholic fermentation, and has given rise to its employment by the Tartars in the production of an intoxicating liquor, known as quass.

THEORY OF FATTENING ANIMALS.

An important suggestion has lately been made by Mr. Lawes, of England, on the waste of food during respiration, and its relationship to the fattening of animals. He remarks that in the case of animals fed for

the butcher the economy of the feeding process will be the greater, the less the amount of food expended by respiration, in the production of a given amount of increase; and it is equally obvious that one ready and efficient means of lessening the proportion of waste or expenditure to the increase of the products, is to lessen, as far as possible, the time taken to produce it. In other words, to fatten as quickly as possible. Thus, from experiments made by him, he assures us that a pig weighing 100 pounds will, if supplied with as much barley meal as he can eat, consume 500 pounds of it, and double his weight—that is, increase from 100 pounds to 200 pounds—in seventeen weeks. He then points out that if instead of allowing the pig to have as much barley meal as he will eat, the 500 pounds of meal had been made to last many more weeks, the result would have been that the animal would have appropriated a correspondingly larger proportion of the food for the purposes of respiration and perspiration, and a correspondingly less proportion in the production of increase. In other words, if the 500 pounds of barley meal were distributed over a longer period of time, it would give less increase in live weight, and a larger proportion of it would be employed in the mere maintenance of the life of the animal. Indeed, if the period of consumption of the 500 pounds of meal be sufficiently extended, the result will be that no increase whatever will be produced, and that the whole of the food, excepting the portion obtained as manure, will be expended in sustaining the animal's existence.

REARING GRAPE VINES IN POTS.

A horticulturist in Stuttgart has devised an ingenious method of rearing grape vines in pots so as to obtain grapes with very little trouble in a room or other sheltered place. For this purpose a vigorous healthy cutting of the late growth of the wood is taken, from three to five feet in length, having at the upper end two fruit buds. The cutting is to be entirely enveloped with moss, and bound with bast, but so as to leave the extremity bearing the fruit buds uncovered. The cutting thus prepared is to be inserted spirally into a sufficiently large flower-pot, leaving the fruit buds projecting above the edge of the pot, which is then to be filled with rich hot-bed earth well moistened, and placed in the sun behind a window and kept uniformly moist. The water applied should never be cold, but rather lukewarm, so as to stimulate to the utmost the development of the young roots. When the weather is such that there is no danger from night frosts, the pot may be placed outside the window or against a sunny wall, or even inserted in the ground in order to secure a more uniform moisture and temperature. When the two fruit buds have produced branches, having bunches of grapes upon them, these shoots are to be trimmed so that two sound leaves remain over each grape shoot, in order to keep up the circulation of the sap, since without this the grapes would not develop. A single leaf would be sufficient, but two are better, for greater security. An occasional watering with a liquid manure is advisable in order to stimulate the growth of the plant, although this must be applied with care, since an excess will do more harm than good. In one instance a grape shoot treated in this way produced nine large bunches of fine grapes, although such a number would be rather more than could conveniently be supported by the plant..

DESTROYING ANTS.

A French agriculturist reports that after trying every method known to him for the destruction of ants infesting some of his fruit trees, he

succeeded in effecting his purpose in the most complete manner by placing a mixture of arsenic and sweetened water in a saucer at the foot of the trees. For the larger species he made use of honey instead of sugar, and he found that in a few days time he could exterminate them completely.

UTILIZATION OF COTTON FIBER.

A communication was presented to the British association at its late meeting in regard to the utilization of the fibers of the cotton seed. The author expressed his astonishment that a vegetable production which was capable of so many important applications, and could be supplied by millions of pounds, was now entirely wasted, the amount thus thrown away in America alone being a million and a half tons.* According to Mr. Rose's estimate, as the seed is composed of 50 per cent. of kernel, yielding about one-third of oil, and 50 per cent. of husk, one-third of which is fiber, the wasted seed should produce 250,000 tons of pure cotton, 250,000 tons of oil, and 5,000 tons of cattle cake, representing the value of \$1,000,000. The husks could then be taken to a paper mill and the cotton abstracted in such a state as to form most valuable material for paper. By a process devised by the speaker, the cotton fiber could be completely separated from the shell. He stated that a very slight alteration in the ordinary machinery for manufacturing paper will enable this material to be utilized.

NEW OIL-SEED.

A new form of oil-seed has lately been exciting the attention of experts. These are supposed to have come from Mozambique, although shipped from Lisbon, and are said to be seeds derived from the *Telfairia pedata*, a tall, climbing, cucurbitaceous plant, a native of the coast opposite Zanzibar. These seeds look somewhat like almonds, and are flat, nearly circular, and about one and a half inches across. The kernel is about the color and hardness of the Brazil-nut, and contains a large quantity of oil, said to be equal in many respects to olive oil in excellence. The fruit is very large, and is stated to contain as many as 250 seeds.

CULTURE OF IPECACUANHA.

The government authorities in India, stimulated by their success in introducing and naturalizing the cinchona tree in various parts of the country, are endeavoring to do the same in regard to the ipicacuanha plant, and with every prospect of success. The plants in the gardens at Nelamboor are said to be doing well, some of the fleshy leaves being already four inches in length.

IMPROVEMENT IN REFINING SUGAR.

A much-needed improvement has lately been made by Dr. Seyforth, of the Brunswick sugar refinery, in regard to the purification of sirups and molasses in the manufacture of sugar, especially that from the beet. As is well known the juices and liquors employed in the first extraction of beet sugar from the raw material, as well as the sirups resulting from the sugar refining process, generally contain a certain quantity of alkaline substances. By treating the saccharine juices with milk of lime, several of the bases of the alkaline salts present in the juices are separated from the acids they were at first combined with, and by thus being set free, and remaining mixed with the sugar, impede crystallization.

* The crop of 1870 would yield at least two millions of tons.

One part of alkaline matter can absorb as much as four parts of sugar, and some kinds of molasses contain as much as eight per cent. of alkali.

Various means have been used to remedy this defect; among them, more particularly sulphuric and phosphoric acids, the use of which, however, is, in most instances, unadvisable for various reasons. Sulphurous acid has also been recommended, and used with excellent advantage.

The method of Dr. Seyforth consists in introducing the sulphurous acid either in the form of gas, or as a weak active solution, into the vacuum pans. In this way it becomes possible to bring all particles of the sugar solution (or sirup) into contact with the sulphurous acid, and to eliminate, by the joint action of heat and vacuum, any excess of that acid which, however, not only saturates free alkalies and carbonate of lime, but also sets the organic acids which may be present, as alkaline salts, free from those combinations. The sulphurous acid thus takes hold of the bases they were combined with, while the greater part of the organic acids are volatilized along with the steam. Thus the sulphurous acid promotes the good and ready crystallization of the sugar, while its action as a decolorizer comes also into play. The details of the new process embrace the two operations of the manufacture of the acid in a simple form, and its introduction into the vacuum pans. The quantity to be applied in any solution varies from four to eight, or from ten to fifteen per cent. of the bulk of liquid sirup to be evaporated. The process is said to involve very little cost, to require no inconveniently large space, to be applicable to any existing manufactory, and to be very easily understood by manufacturers.

COMPARATIVE FECUNDITY OF DUCKS AND HENS.

Some interesting experiments have recently been made upon the comparative fecundity of ducks and hens so as to determine from which of the two the larger number of eggs can be obtained in the same time. For this purpose three hens and three ducks were selected, all hatched in February, and nourished with suitable food. In the following autumn the ducks laid 225 eggs, while the hens laid none. In the next February the laying season began again with the ducks and continued uninterruptedly till August. They showed no inclination to set, but became very thin, although they afterward fattened up somewhat. The total number of eggs laid by the hens amounted to 257, or 86 eggs each; and 392, or 131 each for the ducks. Although the eggs of the ducks were rather smaller than those of the hens, yet they proved to be decidedly superior in nutritive material, so that the superiority in productiveness appears to be decidedly with the ducks.

PREHISTORIC HORSE.

According to Professor Owen, who has lately been examining animal remains from the cavern of Bruniquel, the human bones show most affinity with the Celtic types, the cranium being oval and rather dolicocephalous than brachy-cephalous in general proportion. The cranial capacity corresponds to that of uneducated Europeans of Celtic origin, and exceeds that of the average of Australian aborigines.

Professor Owen, referring to certain carvings on the animal bones accompanying the remains, says that some of them are pictures of the heads of horses, and show much artistic skill. They represent an animal with short pointed ears, the stallions having beard-like hairs. The tails of the horses also appear to have been short, and furnished with long hairs to their base instead of having these hairs form a kind of

tuft nearer the end of the tail. Professor Owen finds no evidence anywhere of an aboriginal wild horse resembling that of the present day, no remains of the kind existing in any museum; and it is probable that the delineations of the cave horse of Bruniquel represent all that we are likely to know of the form of the primitive stock from which the present horse is descended.

TIN FOIL FOR PRESERVING LEMONS.

Tin foil has long been used, with excellent effect, as a preservative from the air, of various substances that require such exclusion, especially such as chocolate, tobacco, cocoa-butter, efflorescent and deliquescent salts, &c. Quite recently a new application has been made of it in the preservation of lemons, which, as is well known, soon become dry and hard when exposed to the air, and ultimately parchment-like and covered with mold. The foil, however, has the effect of preventing such drying up, and of keeping the lemons fresh for an indefinite period of time. In one experiment, after an interval of two months, the lemons had only lost $1\frac{1}{2}$ per cent. of their weight, and in three months little over 3 per cent., and in some cases even less than this. Oranges, similarly treated, lost only about 5 per cent. in two months, and on the removal of the metal covering, both kinds of fruit were found to be as fresh and fragrant as when the experiment commenced.

PRESERVING MEAT IN CANS.

A new method of preserving meat in tin cans, which is favorably commented upon, is that of Mr. R. Jones, of London. In this process the meat is first packed in its raw state into tins of any desired size. The lids are then soldered down, the top of each lid having a small tin tube in it, which communicates with the interior of the tin. These tubes are next inserted into the exhauster, which is a receptacle connected with a machine designated a "Torricellian vacuum," an apparatus in which the air is exhausted by the action of water. The tins are then placed in the cooking-bath, and at the proper juncture the vacuum is created and the meat thoroughly cooked, at a temperature varying from 180 to 228 degrees. At this stage another feature of the invention comes into play. The vacuum having been created, a supply of gravy is turned on from a receptacle, and the tins filled with nutritious fluid. The feed-pipes of the tins are then nipped and the cases hermetically sealed. By thus filling the tins with the gravy the difficulty of collapse, which has always prevented large tins being hitherto used, is obviated, while the whole space of the package is utilized. Testimonials from captains of ships and others who have used it are furnished by the inventor, certifying to the excellent quality of the meat. By this improved process the great objection of over-cooking the meat has been obviated, and as now prepared it would seem to merit general approval.

IMITATION OF HUMAN HAIR.

In a recent article upon the trade in human hair it is stated that a patent has recently been taken out for converting goat's hair into hair for ladies' use; and that the experiment is so successful as to render it almost impossible to distinguish the real article from the imitation. This will be good news not only to the dealers in hair, who might apprehend the exhaustion of their source of supply, but also to the ladies who depend upon art to compensate the deficiencies of nature. The same article states that in 1868 over 22,000 pounds of hair were im-

ported into Great Britain, representing the clip of about 45,000 women. Much of this is obtained from the large communities of sisterhoods scattered throughout France and Belgium.

PRESERVING EGGS.

The French Journal de Pharmacie contains an account of various experiments made in France on the best method of preserving eggs—a subject of much importance there. Among the different processes, the best, and at the same time one of the simplest, was found to consist in rubbing some vegetable oil (linseed especially) on the egg, this preventing any alteration for a sufficient time, and proving to be much more satisfactory than any other plan hitherto recommended.

CARBOLIC ACID AND RINDERPEST.

Dr. Hope, in a communication to the British Association, stated the result of certain experiments upon cattle with carbolic acid, during the rinderpest pestilence in 1867. Of about 270 cows under his charge the majority were attacked by the disease; but by injecting a solution of carbolic acid, either through the mouth or rectum, he was enabled to recover 111 of them. The remainder, not so dealt with, died, or had to be slaughtered. For this reason, he argued that the chemical treatment of contagion is much better than the medicinal, both in respect to man and adult animals.

CARBOLIC ACID IN TANNING.

A patent was not long since taken out in Paris for the application of carbolic acid as a preventive of putrefaction in the different branches of leather manufacture, a few thousandth parts of carbolic acid added to the liquids used in tanning preventing the rotting of the skin, it is said, during the process of preparation.

CHINESE METHOD OF PRESERVING GRAPES.

Travelers inform us that the Chinese have a method of preserving grapes, so as to have them at their command during the entire year; and a recent author gives us the following account of the method adopted. It consists in cutting a circular piece out of a ripe pumpkin or gourd, making an aperture large enough to admit the hand. The interior is then completely cleaned out, the ripe grapes are placed inside, and the cover replaced and pressed in firmly. The pumpkins are then kept in a cool place, and the grapes will be found to retain their freshness for a very long time. We are told that a very careful selection must be made of the pumpkin, the common field pumpkin, however, being well adapted for the purpose in question.

TREATMENT OF SCARLET FEVER.

Mr. Lennox, in a late communication upon the very prevalent epidemic of scarlet fever through England and Wales, calls attention to certain common sense views in regard to its treatment, which commend themselves to all thoughtful persons. He remarks that although we may not always be able to control the appearance of the disease, yet when it has been developed, its further progress is or should be entirely under our control, since it is a contagious disease, and, as such, capable of being antagonized. In this case, as in many other diseases, the poison is evidently propagated in the form of germs, whatever be their

character, which, thrown into the air and falling upon or entering the body, give rise to renewed cases. In scarlet fever these germs appear to retain their vitality for an unusual length of time, one case being mentioned where a piece of flannel, worn around the neck of a scarlet fever patient, was picked up and used two years after, and developed a fresh case of the disease. In a certain instance of an outbreak of scarlet fever over a wide neighborhood it was ascertained that in every instance this took place in families that had been supplied with milk by the same milkman. On inquiry it was found that persons connected with the farm from which milk was supplied had been infected with scarlet fever. The precautions to be taken, according to Mr. Lennox, after the disease has made its appearance, are, in the first place, to isolate the patient at whatever trouble or expense, preventing the approach of any one excepting the nurse and physician. With this, disinfectants must be used with the utmost freedom, whether they be carbolic acid, permanganates of soda and potash, chloride of zinc, chloride of aluminum, chlorinated lime or soda, sulphate of iron, &c. These should be employed in and around the patient. All his discharges and excretions should be immediately disinfected, and all bed clothing and linen worn by the patient treated with the same care. Nurses in attendance, and physicians touching the patient in any way, should also wash their hands in a disinfecting solution before leaving the room. Woolen clothing that cannot be washed should be exposed to a heat of at least 212 degrees, this temperature having the property of destroying the poisonous germs. Even after the patient has apparently recovered, the precautions should be maintained until the peeling off of the cuticle, or the scales, has been entirely accomplished, as in many cases the disease has been traced to the particles of this character.

ITEMS FROM VARIOUS SOURCES.

AN IMMIGRATION SCHEME.—A society in England proposes to organize a colony of agricultural laborers, in number about 60 or 70, to settle in California, supplying them with agricultural implements, and supporting them until such time as they can support themselves. It is proposed that each settler receive 40 acres, ranged in alternate plats around a central section of 640 acres. The condition of carrying out this plan is that the owners of real estate on which the colony is located shall contract to give the society, free of charge, the fee-simple of 640 acres, central block, and the alternate quarter quarter-sections (40 acres) occupied by the immigrants; the owners of the estate to recompense themselves by sale at advanced prices of the alternate quarter quarter-sections. The estimated cost of each immigrant to the society is £100 to £150, or a total investment of £6,000 to £9,000. In the event of the first colony proving a success, it is proposed to organize others. It is supposed that by confining the free grant to 40 acres, each man would soon require the contiguous 40 acres, and would pay a high price for it. The movement originates among wealthy, charitable English persons.

COLONY IN FLORIDA.—A colony has recently been planted on the Halifax River, in East Florida, where it is proposed to raise sugar-cane and semi-tropical productions. It is thought that the climate and soil for such purposes are as congenial as those of Cuba. The location is within a mile of the ocean, where a forty-mile drive on the hard sand beach may be had. The Halifax, a beautiful stream, abounds in fish

and oysters, and the woods in deer, turkeys, and wild cattle. The winters are mild and pleasant.

CALIFORNIA FRUIT.—The aggregate value of fruit raised in California during the year 1870, as reported by the San Francisco Bulletin, was \$2,371,612. The varieties included are apples, apricots, blackberries, cherries, currants, figs, grapes, nectarines, peaches, pears, plums, prunes, raspberries, strawberries, quinces, oranges, lemons, limes, watermelons, cantaloupes, and citron. Total number of pounds, exclusive of oranges, 63,574,150. Number of oranges, 2,466,000.

It is estimated that five hundred tons of California fruits have been received in New York since the 1st of July last, all of which found ready sale at remunerative prices. The principal fruit shipped is the pear. A considerable quantity of grapes have been received, and a notable instance of the effect of receiving fruit of this kind from California is the low price at which imported Malaga grapes are offered in the market compared with last season.

FRUIT IN ALAMEDA COUNTY, CALIFORNIA.—The following is reported as the fruit crop of this county for 1870: Apples, 2,400 boxes, 50 pounds each; apricots, 1,950 boxes, 35 pounds each; blackberries, 1,050 chests, 100 pounds each; cherries, 9,500 boxes, 35 pounds each; currants, 2,250 chests, 100 pounds each; figs, 6 tons; grapes, 55 tons; peaches, 5,650 boxes, 40 pounds each; pears, 12,300 boxes, 60 pounds each; plums, 5,150 boxes, 35 pounds each; prunes, 1,100 boxes, 35 pounds each; raspberries, 300 chests, 100 pounds each; strawberries, 100 chests, 100 pounds each; quinces, 50 boxes, 50 pounds each.

In this county, also, the ramie plant has done extremely well, throwing out an abundance of stalks. The roots planted were brought from New Orleans.

PALM LEAVES.—The steamship *Crescent City* lately took out 50 bales of palmetto leaves from New Orleans to Liverpool, where, at the present gold premium, they bring about 10½ cents per pound. These leaves, which can be had for the mere gathering in the Florida and Louisiana forests, thus command almost the price of low ordinary cotton. If there is any permanent demand for them in Europe it will be the basis of a very profitable new industry. This first consignment is worth about \$1,200, of which at least \$1,000 is clear profit. The labor of gathering these leaves could not have occupied a man more than 30 or 40 days.

EXTENT OF SAN JOAQUIN VALLEY.—The area of this valley is stated by the Stockton (California) Independent at 32,000 square miles, in round numbers, divided about equally between the level valley, 12,000 square miles, and the low foot-hills, 4,000 square miles, on the one hand, and the mountain slopes, 16,000 square miles, on the other hand. This is equivalent to the combined areas of New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut. The population of the valley is 65,476, while that of the States just named is 2,854,593.

GRAPE SUGAR IN GERMANY.—The journal of Applied Chemistry is authority for the statement that there were in 1868 sixty establishments for the manufacture of grape sugar in Germany. The product for that year was 22,000,000 pounds of sirup, and 8,000,000 pounds of sugar. Since that time, other and more extensive factories have been established, and the cultivation of potatoes for the purpose covers a large extent of territory. The process of manufacture does not essentially differ from that pursued in the United States. The great increase in the wine growing districts of this country has occasioned an enlarged demand for glucose, and the manufacture of this article appears destined

to assume large proportions in the United States, where corn can be obtained in unlimited quantity.

CHINESE SUGAR CANE.—A farmer of Stark County, Ohio, states that from a package of Chinese sugar cane, received from this Department, and planted on 28 rods of well-prepared ground, he derived 45 gallons of sirup, equal in flavor to the best New Orleans molasses. With a better mill, he thinks he might have expressed 50 gallons. The product was at the rate of 257 gallons of sirup per acre, worth one dollar, local price, per gallon.

ADULTERATED SIRUP.—It has been stated that "sugar drips," produced by the destructive action of strong sulphuric acid upon starch, is extensively sold and used as "golden sirup." A druggist in New Orleans proposes as a test a few grains of tannic acid dissolved in a wine-glass of rain water in which has been dissolved a teaspoonful of this sirup, or a cup of tea, containing tannic, in which a spoonful of sirup has been dissolved. In either case the liquid will become black and ink-like. The American Chemist answers that the test with tannic acid in tea is totally fallacious, as it is simply a test for iron, which would do no harm, but in many cases, as a tonic, might be absolutely beneficial. With this test the pure golden sirup might be rejected and the starch adulteration selected instead.

LIVE STOCK IN SWITZERLAND.—The number of live stock in Switzerland in 1866 was as follows: Horned cattle, 992,895; sheep, 445,000; swine, 304,191; goats, 374,481. Among the best horned cattle are those of Hasli and Uri. These animals are small, but exceedingly robust. The cows of Schwytz and Appenzell are celebrated for the quantity and quality of their milk. Berne and Fribourg possess animals of colossal proportions, but they do not yield much milk. The cows of Schwytz are perhaps the largest milk-producers in Europe, and they are bought, with the bulls of Summenthal, by the rich farmers of the Grand Duchy of Hesse and Rhenish Hesse. Of the 992,895 head of horned cattle, 627,116 head were milch cows, the product of which is largely used in the manufacture of cheese.

IMPROVED STOCK FOR UTAH.—A society has been organized in Salt Lake City to promote the general introduction and improvement of horses, horned stock, sheep, bees, fish, fowls, &c. Agents have already been sent to the States and to Canada, to make purchases of choice stock. Auxiliary societies are to be formed in different sections of the Territory.

RAMIE PRODUCTION.—Mr. William Hall, President of the "Ramie Plantation Company of Louisiana," states that great improvements have very recently been made in the machinery for preparing the ramie. The plant may now be cleaned on the field, the refuse being left for manure. The fiber is then dried, becoming comparatively pure, white, and silky, divested entirely of gum, and prepared for baling and for spinning. The improved machinery was, unfortunately, not perfected till late in the season, when the ramie had become harsh from a growth of eight months, the tops having been partly killed by frost. It was therefore found impossible to produce the fiber in bulk this season. With these improvements, and one laborer to clean the product of ten acres, Mr. Hall thinks one acre will yield at least two tons, making a product of twenty tons to the hand, estimated to be worth \$200 per ton.

Two joint stock companies for the planting and manufacture of ramie have been organized in Louisiana, one with a working capital of \$45,000, the other with a capital of \$165,000.

WILD FOWL.—In Princess Anne County, Virginia, during the gunning season, from November 1 to March 1, 104 days, the average number of geese shot daily was 25; of ducks, 100; in all, 2,600 geese and 10,400 ducks. Average price of geese, 70 cents; of ducks, 40 cents; making in all for the season, \$5,980.

THE SHARE SYSTEM.—Mr. Louis Grevemberg, of St. Mary's Parish, Louisiana, has been quite successful in cultivating about three hundred and ten acres of land in corn and cane on the share system. He employed six creole families, allowing about twenty-five acres to the hand, or fifty to the family. Each family found their own teams, plows, feed, and food. His share of the crop was 62½ hogsheads of sugar, 100 barrels of molasses, and 800 bushels of corn.

OSAGE ORANGE TIMBER.—It is said that Bois d'Arc timber (Osage orange) will resist rot and decay indefinitely. It makes excellent wagon timber. There is a forest of it on the Upper Trinity River two miles wide and fifty miles in length.

COST OF LIVING IN CALIFORNIA.—The difference between the cost of living in San Francisco and the Atlantic cities is stated by the Commercial Herald of the former city, based on a comparison of bills of fare of well-known restaurants in Boston, New York, and San Francisco. The following table is given:

	Boston.	San Francisco.
Lamb chop, with peas.....	\$1 00	\$0 25
Broiled ham and eggs.....	65	20
Rump steak.....	60	15
Tenderloin steak.....	1 00	20
Large porterhouse steak.....	1 50	25
Fillet of beef, with truffles.....	1 40	50
Fillet of beef, with olives.....	1 15	37½
Pork steak.....	60	15
Mallard duck.....	1 50	50
Venison steak.....	75	25
Roast beef.....	50	15
Boiled tongue.....	50	15
Boiled ham.....	40	15
Roast turkey.....	75	25
Pressed beef.....	40	15

In San Francisco restaurants an admirably cooked and well served meal, consisting of tenderloin or porterhouse steak, with two kinds of potatoes, pickles, green tomatoes, green corn, string beans or peas, and all the bread and butter one requires, can be had for the moderate charge of from 25 to 37½ cents.

FISH CULTURE.—A practical movement is going forward in Virginia to urge the legislature to encourage by proper enactments the propagation of fish in the waters of that State. At the last session of the Maryland legislature \$2,000 was appropriated for the purpose of defraying the expenses of a commission appointed by the governor to stock the rivers of the State. The Alexandria Gazette says:

It is now proposed that Virginia take similar action; that a similar commission and appropriation be made by our legislature; that the two commissions may act jointly, together with the aid of the proper department in Washington; that a practical experiment in pisciculture be made during the spring of 1871, in this neighborhood, on shad and herring roe taken from those fish and brought to this market.

At a late meeting of the Maryland Academy of Science it was sug-

gested that all persons who have ponds, streams, or fountains of water should procure at least a few black bass, which is a hardy breeder, ranking second to the brook trout, and by some considered superior. This fish is well adapted to the waters of the State, requires but little care besides feeding, and protects its young, which the trout does not.

BEXAR COUNTY, TEXAS.—The vice-president of the Agricultural, Stock-raising and Industrial Association of Western Texas, W. G. Kingsbury, furnishes the Department with some interesting particulars in regard to Bexar County, of which San Antonio is the principal town.

Prior to 1859-'60 it was generally believed that peaches were the only kind of fruit that would do well and pay as a marketable product. During the war very little was done in the direction of planting orchards. The few that were planted are now coming to maturity, and exceed the most sanguine hopes of all parties. The peaches are of a superior flavor, and the crop almost a certain one, there having been but two failures in the last twenty years, in both cases caused by late frosts. Last year peaches sold in the San Antonio market at 25 cents a bushel. Apples, pears, apricots, nectarines, and plums, as far as tried, are succeeding well. Peaches, plums, cherries and grapes grow wild throughout Western Texas.

Bexar County is about equally divided into prairie and timber lands, and is well watered by numerous springs, creeks, and one beautiful river flowing from large springs, four miles above the city of San Antonio, down through the center of the county. The surface is undulating, and the soil from two feet in depth on the hills to twelve feet in the valleys. The forest growth consists chiefly of post oak, live oak, hackberry, elm, cotton-wood, pecan, cedar, juniper, and cypress. The air is so pure that fresh meat will not spoil if exposed to a free circulation. The lands are rich and productive, averaging, this season, one bale, of 500 pounds, of cotton to the acre. With the present market facilities, stock-raising is considered the most remunerative employment. Stock cattle (an average of all ages) are worth from \$2 50 to \$3 50 per head. Lands are worth from 50 cents to \$2 00 per acre, unimproved, although they are rapidly advancing in price.

METEOROLOGY.

NOVEMBER AND DECEMBER, 1870.

[COMPILED IN THE DEPARTMENT OF AGRICULTURE FROM REPORTS MADE BY OBSERVERS OF THE SMITHSONIAN INSTITUTION.]

Table showing the highest and lowest range of the thermometer, (with dates prefixed,) the mean temperature and amount of rain-fall and melted snow, (in inches and tenths,) for November and December, 1870, at the stations named. Daily observations at 7 a. m. and 2 and 9 p. m.

Stations in States and Territories.	NOVEMBER.						DECEMBER.					
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
MAINE.												
Houlton	3	Deg. 58	30	Deg. 15	Deg. 33.5	In. 6.01	11	Deg. 50	24	Deg. -10	Deg. 23.9	In. 5.10
Orono	3	57	30	21	36.6	5.61	2	43	24, 30	-5	24.4	3.01
Surry	3	59	17, 30	20	38.7	.....	2, 13	46	25	-3	26.7	.....
Williamsburg	3	47	22	16	31.2	5.75	2	40	25	-10	18.2	2.10
West Waterville	3	61	22	24	37.6	4.34	2	46	25, 30	0	26.8	2.60
Gardiner	3	56	17	27	39.5	4.19	2	46	24	-2	27.0	2.82
Lisbon	3, 27	58	17	18	38.7	3.40	2	50	24	-9	25.8	2.25
Norway	3	59	17	19	35.9	3.40	2	46	24	-4	23.7	1.85
Cornish	3	60	22	24	36.5	3.89	1	47	25, 30	-1	25.8	2.20
Cornishville	3	61	22	24	37.9	4.60	2	47	25	0	26.3	3.00
Averages					36.6	4.58					24.9	2.77
NEW HAMPSHIRE.												
Stratford	2	58	16	12	34.6	5.42	2	44	30	-12	20.9	1.70
Whitefield	2	59	22	13	33.5	4.58	1	45	30	-19	31.9	1.13
Mt. Washington	25	27	30		16.5	.....					
Tamworth	5	56	17	15	35.7	4.05	1	49	24, 30	-13	25.3	2.25
Contoocookville	2	63	17	19	41.3	.....	1, 2	50	25	-2	29.3	.....
Goffstown Centre	3	63	16, 17, 18	26	38.9	2.34	2, 5	48	25	-2	24.6	1.60
Averages					33.4	4.10					26.4	1.60
VERMONT.												
Lunenburg	9	56	22	18	33.7	6.15	2	40	25	-18	21.8	0.80
North Craftsbury	2	62	22, 30	13	31.7	3.29	1	41	30	-18	18.8	2.23
Newport	9	55	30	18	35.5	4.81						
Randolph	9	63	16	17	35.6	2.40	1, 2	45	25	-13	24.4	2.02
Woodstock	2, 5	51	16	15	34.2	1.87	1	44	30	-12	22.6	2.56
Near St. Albans	3	62	30	19	34.8	2.30	1, 2	42	29	-11	22.5	2.70
West Charlotte	2, 9	60	16, 20	20	38.4	2.38	2	49	30	-4	27.7	1.44
Panton	9	59	20	19	35.5	2.38	2	46	30	-12	24.9	2.12
Castleton	9	62	16	22	37.3	1.64	2	47	30	-3	26.7	0.47
Averages					35.2	3.02					23.7	1.80
MASSACHUSETTS.												
Kingston	9	66	17, 30	23	43.4	2.65	2	53	25, 30	0	33.0	3.15
Topsfield							1, 2	43	30	-2	23.9	3.30
Lawrence	3	65	17	25	41.1	3.62	2	50	30	0	30.6	3.03
Newbury							2	50	30	1	30.1	.....
Georgetown	2	65	17	23	41.0	4.53	2	50	25	4	29.8	4.45
Milton	3	68	17	25	43.4	3.08	2	65	30	3	34.1	2.38
Cambridge	3	68	17	27	44.0	.....	2	53	25	4	33.0	.....

Table showing the highest and lowest range of the thermometer, &c.—Continued.

Stations in States and Territories.	NOVEMBER.						DECEMBER.					
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and snow.
Mass.—Contin'd.		Deg.		Deg.	Deg.	In.	Deg.		Deg.	Deg.	In.	
North Billerica...	3	66	17	16	40.5	2.50	2	50	25	5	30.5	.....
West Newton.....							5	56	25	—6	33.1	4.35
New Bedford.....	3	61	19	29	43.4	3.15	2	51	30	4	32.1	3.35
Worcester.....	2	62	19	27	40.3	3.43	1, 2, 4	48	25	5	29.1	4.10
Mendon.....	3	66	17	23	40.4	3.40	4, 13	50	30	—2	28.2	1.30
Lunenburg.....	2	65	19	26	40.3	2.55	2	50	30	0	28.4	5.02
Amherst.....	2, 9	61	17	25	39.1	3.28	2	47	30	1	28.0	1.84
Richmond.....	2	60	11, 17	26	37.4	3.12	5	47	25, 29	2	27.6	1.75
Williams' College	2	62	16	18	37.1	2.25	1	49	30	—3	26.6	0.76
Hinsdale.....			16, 19	18	33.6	3.98	4	56	25	—4	25.6	0.95
Averages.....					40.4	3.20					29.9	2.84
RHODE ISLAND.												
Newport.....	2	66	17	28	42.3	2.38	2	51	25, 30	10	35.6	3.06
CONNECTICUT.												
Columbia.....	2	68	20	24	42.5	3.40	7	58	30	0	30.6	3.47
Middletown.....	2	66	20	19	41.3	2.45	4	55	30	—2	31.2	2.30
Southington.....	2	63	19	25	41.4	2.88	4	53	30	—1	30.5	1.92
Colebrook.....	2	62	19	20	37.5	3.09						
Brookfield.....	6	65	17	23	43.6	2.35	2	60	30	10	34.8	.....
Round Hill.....							4	51	30	0	29.5	1.68
Averages.....					41.3	2.83					31.3	2.34
NEW YORK.												
Moriches.....	2, 9	60	17	16	39.0	3.37	2	51	30	—4	29.5	3.32
South Hartford.....	2	68	16	22	40.7	1.13	1	54	30	—9	28.4	1.73
North Argyle.....									30	—11	.....
Luzerne.....	2, 5	54	16	14	35.6	2.15	2	46	30	—20	24.1	2.81
Garrison's.....	9	52	16, 19	25	40.9	2.22	1, 2	50	30	7	33.0	2.06
Throg's Neck.....	1, 9	64	19, 20	26	44.9	.....	4, 5	52	30	4	32.7	.....
White Plains.....	2	72	16	29	45.2	.....					
Cooper Union.....	9	65	20	30	46.7	2.41	2	55	30	12	35.9	2.83
Brooklyn.....	9	66	19	32	46.7	2.25	5	56	30	10	35.8	1.85
Flatbush.....	8	65	19	29	48.8	0.93	11	55	29	9	34.4	3.19
Glasco.....	15	58	10	22	37.0	2.70	2, 7	58	30	—3	30.2	2.10
Newburg.....	2	66	19	29	44.7	1.90	2	54	30	9	33.0	1.30
Minaville.....	2	60	15	20	36.6	1.60	1	48	29	0	25.2	1.33
Cooperstown.....	2	64	16	19	37.0	1.92	5	50	23, 29	—2	25.0	1.96
Gouverneur.....	2	63	22	14	34.5	1.71	1, 2, 6	44	29	—17	21.3	3.34
North Hammond.....	2, 3	65	22	24	39.4	2.14	{ 1, 2, 3, 4, 13 }	46	29	—8	25.0	2.50
Utica.....	2	59	16	20	37.6	2.09	4	47	29	—4	27.4	3.31
South Trenton.....	2	61	22	16	34.9	2.58	1, 4	48	29	—6	24.6	2.45
Cazenovia.....	2	62	22	15	36.8	.....	5	48	29	—5	25.5	.....
Oneida.....							2, 4	47	29	—4	27.8	3.56
Depauville.....	2	66	22	20	36.8	1.95	2, 4	44	29	—9	24.2	3.57
Oswego.....	2	63	22	25	39.6	2.75	1	48	29	2	29.0	3.33
Palermo.....	2	63	16, 22	19	36.1	3.00	5	47	29	—9	24.9	1.55
North Volney.....	2	65	22	21	38.3	.....	4, 5	47	29	—4	27.0	.....
Nichols.....	2	66	16	17	37.1	.....	5	53	22	2	28.3	.....
Newark Valley.....	2	66	16	14	36.9	1.00	5	56	30	—8	27.5	2.20
Himrod's.....	2	63	19	20	37.4	0.69	1, 4	50	29	0	26.7	1.44
Little Genesee.....	2	68	11	12	35.8	3.15	4, 5	50	29	—3	25.8	3.03
Suspens'n Bridge.....	2, 8	65	19	23	39.9	2.85	4	52	29	7	28.3	3.95
Leekport.....	8	67	22	22	33.5	2.54	4	47	29	4	28.1	3.26
Buffalo.....	8	66	23	22	40.0	2.89	5	49	29	2	29.3	3.44
Averages.....					39.4	2.16					28.2	2.62
NEW JERSEY.												
Paterson.....	9	64	16, 20	27	43.3	2.68	2, 5	53	30	5	32.7	1.36
Newark.....	9	65	19	34	43.7	2.46	2, 4	53	30	6	33.4	2.19

Table showing the highest and lowest range of the thermometer, &c.—Continued.

Stations in States and Territories.	NOVEMBER.						DECEMBER.					
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
N. JERSEY—Con.												
		<i>Deg.</i>		<i>Deg.</i>	<i>Deg.</i>	<i>In.</i>		<i>Deg.</i>		<i>Deg.</i>	<i>Deg.</i>	<i>In.</i>
South Orange	9	69	19	25	43.1	3.18	4	56	30	2	31.8	2.58
Trenton	9	74	20	29	47.9	1.67	5	58	30	8	37.0	0.90
Rio Grande	2	69	20	25	46.7	4.75	4	57	24	10	34.5	4.30
Moorestown	9	72	16, 20	26	43.4	1.95	4, 5	57	30	5	33.6	1.59
New Germantown	29	65	19	20	42.1	1.68	2	54	30	2	31.3	1.86
Haddonfield	9	70	20	26	43.3	1.88	4, 12	55	30	5	33.4	1.59
Greenwich	9	71	25	30	46.3	1.65	5	58	24, 25	11	35.5	1.60
Vineland	9	71	20	25	44.2	2.80	4, 5, 12	57	25	7	34.1	2.32
Averages					44.4	2.47					33.7	2.03
PENNSYLVANIA.												
Nyces	2	64	16	15	37.5	2.22	1, 4	50	30	— 5	25.8	1.04
Hamilton	2	70	16, 17, 19	25	40.0	1.50	4	52	30	0	32.0	1.13
Fallsington	9	68	19	27	44.5	1.50	4, 5	56	30	6	33.0	1.80
Philadelphia	9	70	20	30	46.9	1.97						
Germantown, (M)	29	67	19	28	41.1		1	60	30	2	33.3	
Do (T)	2	66	20	27	44.9	2.23						
Horsham	2	67	20	26	43.3	1.30						
Plym'th Meeting	2	68	17, 20	26	43.4	2.27	4	58	30	1	33.1	1.49
Egypt	28, 29	60	18	20	41.5		4	55	30	4	31.6	
Factoryville	2	64	17	17	37.4	1.83	5	53	30	— 2	27.7	1.65
Reading	2	67	16	20	46.1	2.09	4	59	24	12	36.1	2.39
West Chester	9	67	22	23	42.2	1.99	2, 4	57	30	5	31.9	2.19
Parkerville	2, 29	64	17, 19	24	42.7	1.42	2, 5	56	30	1	32.8	2.00
Tamaqua	6	63	18	11			5	48	26	— 10	25.6	
Catawissa	1	70	16	22	40.4		4	60	23	9	35.2	
Ephrata	29	64	16, 19	25	43.4	1.59	4	58	30	4	31.9	2.00
Mount Joy	2, 17	67	16	29	45.1							
Carlisle	29	66	20	24	42.7	1.75	4	61	24	8	33.2	2.35
Fountain Dale	2, 28, 29	62	20	29	43.6	1.28	4	61	24, 30	5	33.0	2.10
Tioga	2	64	16	16	37.3	0.75	3	54	30	0	27.8	1.10
Lewisburg	2	61	16	20	39.6	1.60	4	57	24, 30	4	30.2	1.53
Grampian Hills	2	64	11	18	34.6	1.55	4	51	24	— 6	23.2	3.30
Johnstown	2	67	11	24	40.1	1.32	5	60	24	0	30.3	
Franklin	2	67	11	24	38.0	2.35	4	55	23, 24, 29	2	28.0	4.66
Pittsburg	2	67	19	29	43.0	1.30	5	57	24	2	31.7	2.00
Connellsville	2	71	19	24	41.6		5	62	24	— 2	29.0	
Brownsville	2, 8	70	19	26	44.0		5	62	24	0	32.0	
New Castle	2, 8	60	11	23	40.6	2.20	4	55	25	1	27.9	1.50
Beaver	2, 8	65	11	27	41.7		5	56	24	4	31.0	0.70
Canonsburg	2	78	11	22	41.7	1.06	4	62	24	— 1	30.1	1.75
Averages					41.7	1.69					30.7	1.93
DELAWARE.												
Milford	5	65	20	24	44.3	2.20	5	58	27	6	33.5	1.06
Dover	9	73	20	28	46.7	1.10	2	58	24, 25, 30	10	35.8	0.97
MARYLAND.												
Woodlawn	9	67	20	24	44.5	2.24	2	60	24	6	33.1	1.84
Fallston	29	72	20	27	47.0	1.66	4	65	24	7	34.2	2.10
Annapolis	9	74	20	25	49.1	1.82	4	60	30	6	37.7	1.33
Woodstock Col							4	59	30	4	32.4	1.22
Mt. St. Mary's	29	64	20	25	43.4	1.83	5	59	24	5	32.8	2.05
Averages					46.0	1.89					34.0	1.71
DIST. OF COLUMBIA.												
Washington	9, 29	65	19	31	46.5	1.37	5	58	24	8	36.0	0.95
VIRGINIA.												
Johnsontown	9	76	20	28	50.0	2.00	5	66	30	9	38.7	2.15
Hampton	2, 5	72	20	25	49.9	1.55	4, 5	65	25	6	38.7	2.50

Table showing the highest and lowest range of the thermometer, &c.—Continued.

Stations in States and Territories.	NOVEMBER.						DECEMBER.					
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
VIRGINIA—Cont'd.												
		Deg.		Deg.	Deg.	In.		Deg.		Deg.	Deg.	In.
Sarry C. H.	9	78	20	20	49.4	2.54	5	71	25	4	38.2	3.80
Comorn.	9	71	16, 19	31	48.2	0.94	5	61	25	6	35.9	0.99
Vienna.	29	69	20	32	46.8	1.30	5	59	25	8	34.8	3.40
Fairfax C. H.	1	70	16	23	39.2	0.50	4, 5	60	24, 25	10	32.1	0.60
Accotink.	9, 29	68	19, 20	24	44.8	1.75	4, 5	60	30	4	33.0	1.45
Piedmont.	13, 29	67	20	22	44.3	1.80	4	63	30	3	36.6	2.30
Piedmont Station.	27, 29	69	20	20	41.8	2.00	5	64	30	2	32.3	2.30
Staunton.	13, 14	66	16, 19	29	44.9	1.56	4, 5	60	24	5	32.3	2.05
Lexington.	13	66	16, 20	18	41.3	1.77						
Lynchburg.	2, 13	68	20	31	49.2	1.63	4	62	24	9	38.1	1.13
Near Wytheville.	2	66	20	20	41.9	1.55	4	60	24	—4	31.4	1.40
Averages.					45.5	1.61					35.2	2.01
NORTH CAROLINA.												
Goldsboro.	3, 5, 9	80	17	28	53.4	2.00	5	72	25	8	42.5	3.40
Warrenton.	9, 30	69	21	32	49.3	1.90						
Oxford.	9, 13	70	20	26	47.2	2.40	5	63	25	5	36.2	2.60
Albemarle.	13	76	20	15	46.3	1.97	2, 4, 5	70	25	0	36.2	2.91
Statesville.	9	66	19	13	46.0	0.75	2	56	24, 25	0	32.3	4.06
Asheville (A.).	2	69	20	19	44.7	1.80	5	64	24, 25	—1	34.2	2.70
Do. (H.).	1, 2	66	20	13	44.1	.....	5	62	24, 25	0	33.0	.....
Averages.					47.3	1.80					35.7	3.13
SOUTH CAROLINA.												
Aiken.	3	78	19	29	52.7	2.11	5	75	24	10	43.7	1.53
Gowdeysville.	9	70	20	27	52.1	2.50	4, 5	69	25	7	41.6	5.10
Bluffton.	3, 8	86	{ 17, 18 19, 20 }	39	60.9	4.20	5	68	24	18	48.4	5.20
Averages.					55.2	2.94					44.6	3.94
GEORGIA.												
Berne.	1, 9	76	20, 27	34	55.7	0.75	19	72	25	16	46.9	2.10
St. Mary's.	9	80	26	34	58.9	2.65	19	75	25	18	50.0	3.07
Penfield.	3	78	17, 19, 20	30	52.0	2.95	5	69	25	7	41.1	3.40
Atlanta.	16	76	17, 19, 20	32	54.0	4.62						
Averages.					55.2	2.74					46.0	2.86
ALABAMA.												
Rockville.	2, 5	77	19	19	50.6	3.25	5	70	24	3	40.3	4.00
Carlowville.	2	84	23	32	54.9	8.66	7	72	24	12	44.8	7.70
Selma.	2, 3	85	17, 19	31	57.0	5.15	5	74	24	14	46.8	5.20
Greene Springs.	4	80	17	25	52.3	7.35	7	72	24	9	42.6	5.13
Coatopa.	4	83	17	26	53.4	5.30	5	73	24, 25	11	44.0	5.80
Fish River.	5	76	20	34	.....	1.40	1, 6, 7	64	24	22	.....	5.25
Averages.					53.6	5.22					43.7	5.51
FLORIDA.												
Port Orange.	2, 4, 14	78	24	35	63.2	2.02	17, 19	76	24	25	55.0	3.30
Jacksonville.	2	85	23	40	62.7	4.29	6, 8, 19	73	25	19	53.3	1.95
Pilatka.	9	90	17, 24	38	64.6	3.60	31	80	25	22	51.6	3.11
Newport.	3	81	20	29	57.3	2.60						
Chattahoochie.							14	87	25	15	.....	9.50
Averages.					62.0	3.13					53.3	5.47
TEXAS.												
Clarksville.	8	78	22, 25	38	59.7	.....	4	68	24	15	45.4	.....
Gilmer.	2	90	22, 25	29	58.1	4.90						

Table showing the highest and lowest range of the thermometer, &c.—Continued.

Stations in States and Territories.	NOVEMBER.						DECEMBER.					
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
TEXAS—Cont'd.		Deg.		Deg.	Deg.	In.		Deg.		Deg.	Deg.	In.
Palestine							31	73	24	10	47.4	6.30
Oakland	4	88	25	34	63.9	2.10	4	73	23	15	49.8	1.00
Blue Branch		6	99	25	23	62.1						
Bluff	3, 4, 5	86	22, 25	34	62.3	2.62						
Clinton		2	89	25	31	62.1	4	77	23	17	50.7	1.10
Austin		2	90	25	30	60.1	4	75	23	11	45.9	1.30
Houston							4.6	80	23	19	51.5	
Averages					61.2	3.54					48.5	2.43
LOUISIANA.												
New Orleans	4	85	17, 22	34	59.1	6.55	7	76	24	19	49.2	8.45
Shreveport	2, 5	80	17	30	45.6							
Ponchatoula	2, 3	90	17	29	60.5	4.22	5	80	24	16	50.3	9.01
MISSISSIPPI.												
Columbus	5	80	17	25	52.1	3.36						
Philadelphia							5, 7	73	24	8	42.7	4.50
Grenada	5	86	19	22	53.2	1.45						
Near Brookhaven	3	84	17	26	54.4	4.80	7	75	24	9	43.9	7.80
Clinton College							7	74	24	11	43.8	
Holly Springs	5	67	22	37	58.0	0.70						
Averages					55.7	2.58					43.5	6.15
ARKANSAS.												
Helena	4, 5	86	26	31	54.8		7	73	24	4	38.5	
Mineral Spring	2	80	22	24	52.2	2.75	4, 5	66	24	8	40.3	4.50
Fayetteville	3	82	22	20	52.7	2.05	2, 3	72	24	-12	33.0	2.74
Averages					53.2	2.40					37.3	3.62
TENNESSEE.												
Elizabethton	2	72	19, 20	22	44.9	0.95	4	60	25	-2	33.2	0.65
Tusculum College							5	64	25	0	33.1	
Knoxville	2	74	18	22	43.4	1.50						
Lookout Mount'n	6	72	19, 23	30	51.0		5	67	24	-2	37.1	
Clearmount	2	75	19	22	47.5	2.01	5	68	24	0	36.9	3.20
Clarksville	4	79	19	24	47.9	0.95	4, 5	65	24	0	35.7	3.07
La Grange	4	83	21	29	51.3	1.90	4	66	24	4	37.3	4.70
Averages					47.7	1.46					35.6	2.91
KENTUCKY.												
Pine Grove	2	72	19	20	43.9	2.46	5	64	24	-6	31.1	2.36
Danville	2	75	19	26	47.7	1.26	5	70	24	-4	34.9	2.64
Shelby City	2	76	19	24	46.6	1.91	5	65	24	-4	34.1	2.48
Louisville	2	75	19	20	46.6	2.40	4, 5	58	24	-2	33.4	2.20
Averages					46.2	2.01					33.4	2.42
OHIO.												
Salem	2, 8	70	25	22	39.5	1.84	5	59	25	-6	27.2	2.79
New Lisbon									24, 25	-3		2.43
Steubenville	2, 8	63	11, 19	23	43.0	1.25	4	54	24, 25	2	31.0	1.73
Painesville	8	68	25, 26	23	40.9	3.88	5	54	25	-1	26.0	6.10
Milnersville	8	62	11	20	35.8	1.40	1, 2, 3	50	24	-4		0.58
Cleveland	8	72	25	22	40.2	3.07	5	53	24, 25	1	28.9	2.82
Wooster							5	65	24	-4	30.3	
Adams' Mills	8	68	19	21	42.2	1.56	5	61	24	-4	31.0	2.10
Pennsville							5	54	24	-6	28.9	3.00
Gallipolis	2	72	16	23	45.2	1.35	5	63	24	-1	31.3	2.23

Table showing the highest and lowest range of the thermometer, &c.—Continued.

Stations in States and Territories.	NOVEMBER.						DECEMBER.					
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
OHIO—Cont'd.												
		Deg.		Deg.	Deg.	In.		Deg.		Deg.	Deg.	In.
Oberlin	8	71	25	18	38.9	2.60	5	53	24	—5	27.2	2.35
Kelley's Island	8	70	19	30	43.2	1.64	5	55	23, 24	0	29.9	2.23
Sandusky	8	72	19, 25	27	41.8	2.95	5	57	24	—1	29.7	2.48
Carson	8	70	25	24	42.6	1.95	1	52	23	0	29.8	1.60
North Fairfield	8	74	19	24	42.7	2.16	4	60	24	—8	28.5	1.81
Gambier	8	64	19	22	39.0	1.48	5	55				
Westerville	2	70	19	20	40.9	1.63	5	61	24	—7	29.2	2.43
North Bass Isl'd.	2	67	19	27	42.9	3.01	5	56	25	—2	29.5	2.63
Maion	2, 8	67	19	18	38.9	2.42	1, 3, 4	49	24	—9	26.5	2.68
Hillsboro	2	66	25	21	42.3	1.59	5	60	24	—6	29.1	2.41
Bowling Green	2	73	19	21	42.5	1.65	4, 5	57	23	—10	29.3	3.75
Kenton	2, 8	61	19	30	42.3	1.73	5	62	24, 25	—12	31.5	5.08
Bellefontaine	2, 8	68	19	26	40.3	2.25	5	58	24	—14	26.7	2.72
Urbana Univ.	8	69	17, 24	23	40.4	1.90	4	53	24	—12	26.9	3.13
Bethel	2	72	24, 25	17	42.1	1.50	5	63	24	—8	29.2	2.10
Carthage	8	70	10, 22	27	43.5	2.75	5	59	24	—15	28.7	3.51
Jacksonburg	2, 8	74	19	29	44.2	1.50	4	57	24	—12	29.7	3.10
Mt. Auburn	2	71	19	28	45.5	2.21	4	60	24	—10	30.9	2.09
Cincinnati (H.)	8	75	24	24	45.0	1.50	4	60	24	—8	30.4	2.17
Do. (P.)	2	67	19, 23, 24	27	44.2	1.40	5	63	24	—7	31.8	2.30
College Hill	2	72	19, 23, 24	27	43.8	2.00	3, 4, 5	52	24	—10	29.4	2.25
Averages					41.9	2.01					28.9	2.65
MICHIGAN.												
Detroit	2	68	19	22	39.0	2.00	4	55	23	—11	27.2	2.90
Monroe City							4	60	24	—5	29.2	1.40
Ann Arbor	2, 8	64	19	22	38.8	2.10	4	53	23, 25	—4	27.9	4.99
Alpena	12	56	21	26	38.5	0.96						
Macon									23	—5	24.0	
State Agr'l Col.							4	52	23	—11	24.8	2.57
Litchfield	2	66	22	19	37.1	1.98	4	52	29	—12	24.3	2.36
Cold Water	2	66	22	18	38.2	1.44	4	53	23, 24	—8	24.7	3.50
Gr'd Rapids (H.)	2	69	22	16	39.4	1.37	4	52	23	—2	27.5	4.75
Do. (S.)	8	65	22	16	39.6	0.88						
Northport	1	62	21	23	39.0	1.58	4	49	22	10	27.6	3.08
Benzonia	8	61	21	20	39.4	1.30	4	49	23	10	28.3	4.01
Olivet College							4	49	29	—4	24.7	3.97
Copper Falls	1	50	21	9	32.0	1.85	3	41	23, 24	—3	19.3	3.73
Ontonagon	2	50	21	20	39.0	0.90						
Averages					38.2	1.49					25.8	3.39
INDIANA.												
Aurora	4, 8	70	24	22	43.4	1.16	15	76	24	—8	30.7	2.37
Vevay	2	74	19, 23	24	44.9	1.50	5	61	24	—4	32.1	2.13
Mt. Carmel	2	68	19	23	41.2		1, 4	54	24	—10	26.5	2.07
Spiceland	2, 8	71	23	22	41.1	1.75	4	56	24	—11	28.4	1.70
Laconia	2, 4	74	19	22	45.7	2.26	4	60	24	—4	33.8	2.74
Columbia City	2	69	{ 10, 14, 19, 22 }	32	44.1	1.94						
Knightstown	2	71	23	20	42.6	1.62	4	56	24	—15	27.6	2.15
Fort Wayne							4	59	24	—16	27.4	6.71
Warsaw				28		2.33	4	62	24	—14	27.8	1.04
Indianapolis	2, 8	71	19	20	42.7	1.27	4	57	24	—15	28.1	1.93
Near La Porte	8	65	22	24	53.7	0.70	3	58	24	—12	27.4	1.82
Annapolis	28	68	19	16	39.1	1.10	1, 4	56	23	—26	25.3	1.60
Merom	2	73	19	26	46.5	1.50	4	60	24	—8	31.6	1.45
Kentland							1	61	23	—21	26.3	5.28
New Harmony	2	72	19	23	46.8	1.27	1	57	24	—2	32.4	2.03
Averages					44.3	1.53					30.0	2.50

Table showing the highest and lowest range of the thermometer, &c.—Continued.

Stations in States and Territories.	NOVEMBER.						DECEMBER.					
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
ILLINOIS.												
Chicago.....	8	Deg. 69	19	Deg. 27	Deg. 43.8	In. 1.16	1	Deg. 53	23, 24	Deg. -9	Deg. 28.3	In. 2.46
Near Chicago.....	28	74	19	22	42.0	.....	1	56	23	-14	26.9	.....
Evanston.....	2	66	19	22	40.2	1.58	2, 5	48	23, 24	-10	26.3	2.15
Marengo.....	8	68	19, 22	17	37.8	0.69	4	50	23	-18	22.5	1.50
Charleston.....	2	73	19	17	41.9	2.01	4	59	23	-22	26.5	1.85
Mattoon.....	1, 2	68	22	21	43.7	3.00	4	54	24	-8	28.4	2.38
Aurora.....	8	67	19, 22	19	38.2	1.51	4	52	24	-23	23.4	1.47
Louisville.....	2	79	19	20	46.4	1.80	1, 4	60	24	-14	30.4	2.60
Belvidere.....	8, 12	64	22	11	36.6	2.33	1	55	23	-15	22.8	2.53
Ottawa.....	8	69	21, 22, 30	26	42.9	1.58	.....	.....	.....	.....	.....	.....
Decatur.....	2	69	19, 22	20	43.4	1.68	4	60	24	-14	27.1	2.25
Pana.....	2	72	22	22	42.9	1.25	1, 4	58	24	-11	27.2	1.65
Winnebago.....	12	62	21, 22	17	37.5	0.60	5	57	23	-15	21.5	0.78
Rochelle.....	2	63	19, 22	20	38.2	.....	4	53	23	-15	24.0	.....
Wyanet.....	12	73	22	19	44.1	1.84	2	60	23	-13	26.2	1.53
Hennepin.....(S.)	8	70	22	17	43.0	.....	1	56	24	-12	25.0	.....
Do.....(O.)	1, 2, 28	66	22	18	41.9	2.10	1, 4	56	23	-11	26.2	2.10
Peoria.....	2, 28	68	22	20	43.3	1.21	4	56	23, 24	-13	27.7	1.07
Havana.....	28	70	22	15	41.6	2.50	1, 2, 4	56	23	-19	26.4	1.71
Waterloo.....	2, 4	72	22	20	44.2	.....	4	57	23	-6	29.0	1.07
Du Bois.....	2	75	23	22	46.2	2.20	1	65	24	-16	30.6	2.15
Galesburg.....	12	66	22	22	43.1	0.60	30	69	23	-10	27.3	1.08
Manchester.....	27	78	22	20	44.0	1.65	9	68	24	-13	27.7	2.30
Mt. Sterling.....	28	69	22	22	45.8	1.55	4	59	24	-7	29.7	2.22
Andalusia.....	3	64	22	18	41.7	.....	30	54	23	-8	26.4	.....
Oquawka.....	12	80	22	20	44.2	1.67	1	59	23, 24	-5	28.5	0.62
Augusta.....	12, 27, 28	69	22	17	42.9	1.40	4	62	24	-12	27.0	1.41
Warsaw.....	1	71	16, 18, 22	25	43.9	1.53	3, 4	57	24	-10	27.1	1.29
Averages.....	.....	.....	.....	.....	42.0	1.63	.....	.....	.....	.....	26.7	1.70
WISCONSIN.												
Sturgeon Bay.....	2, 26	58	21	18	38.8	1.15	1, 4	46	24	-3	24.9	2.39
Manitowoc.....	2	60	19	20	40.0	0.68	2	48	23	-10	25.6	2.13
Hingham.....	8	65	21	20	40.4	.....	2	48	23, 24	-10	24.3	.....
Milwaukee.....	8	69	22	20	30.0	0.94	2	50	23, 24	-10	25.2	1.79
Geneva.....	2	62	21	14	38.3	1.20	2	49	23	-17	21.7	1.77
Waupaca.....	1, 27	60	21	18	38.2	.....	2	49	23, 24, 29	-10	24.2	1.20
Embarrass.....	27	62	21	16	36.5	2.15	2	54	23	-14	21.4	1.25
Rocky Run.....	8	71	21	16	38.4	0.68	2	44	29	-14	23.2	1.40
Madison.....	8	64	22	19	38.7	0.33	2	48	24	-13	22.2	0.67
Edgerton.....	27	66	19, 21, 22	20	40.6	0.90	3	55	23, 24	-12	24.9	0.90
Mosinee.....	13, 27	55	21	10	32.5	2.82	4	48	23	-24	17.3	1.66
Baraboo.....	5	60	21	0	29.7	1.13	3	50	23	-16	22.3	4.00
Tunnel City.....	27	60	21	12	37.6	0.70	3	48	24	-18	.....	.....
Bayfield.....	26	60	21	8	36.5	.....	1	50	23	-12	21.6	.....
Averages.....	.....	.....	.....	.....	36.9	1.15	.....	.....	.....	.....	23.0	1.74
MINNESOTA.												
Beaver Bay.....	26	62	21	20	36.3	1.04	.....	.....	.....	.....	.....	.....
St. Paul.....	1	64	18	19	38.4	1.38	3	52	23	-15	19.7	0.90
Minneapolis.....	1	63	21	6	36.8	1.76	1	53	23	-21	17.3	0.60
Sibley.....	3	60	21	10	36.4	1.50	3	53	23	-21	18.8	0.10
Koniska.....	1	60	21	4	35.4	0.60	2	54	23	-20	19.2	0.45
Litchfield.....	1	64	21	16	38.5	0.90	1	54	26	-14	18.5	0.30
New Ulm.....	1	68	21	14	39.4	1.10	3	55	23	-20	20.7	0.35
Medelia.....	25	74	21	10	38.6	1.54	2, 3	70	23	-22	28.8	1.00
Averages.....	.....	.....	.....	.....	37.5	1.23	.....	.....	.....	.....	20.4	0.53
IOWA.												
Waukon.....	1	62	18	18	36.7	.....	.....	.....	.....	.....	.....	.....
Dubuque.....	6	60	22	22	39.7	0.96	1, 2	51	23	-12	24.0	0.68
Monticello.....	2, 12, 26	60	21	17	38.0	0.61	1, 3	53	23	-12	22.7	0.54
Muscatine.....	12	62	21, 22	21	39.7	0.82	.....	.....	.....	.....	.....	.....

Table showing the highest and lowest range of the thermometer, &c.—Continued.

Stations in States and Territories.	NOVEMBER.						DECEMBER.					
	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.	Date.	Maximum temperature.	Date.	Minimum temperature.	Mean temperature.	Rain and melted snow.
IOWA—Cont'd.												
		Deg.		Deg.	Deg.	In.		Deg.		Deg.	Deg.	In.
Bowen's Prairie...	1	70	16, 18, 21	20	39.4	0.50	3	52	23	—18	23.7	0.80
Fort Madison...	23	65	22	19	42.8	1.00	4	56	23, 24	—8	28.4	0.72
Guttenberg...	1	64	18, 21	16	36.7	.....	3	52	23, 24	—14	20.2	.....
Mount Vernon...	12	61	21, 22	19	38.0	.....	1	52	23	—14	23.4	.....
Iowa City...	1	66	22	20	39.4	0.94	1	54	23	—11	24.4	0.35
Independence...	1	61	16, 18	18	37.6	0.80	3	52	23	—15	20.9	0.90
Near Independence	1, 26	62	19, 24	12	38.0	0.70	3	53	23	—17	19.5	0.70
Rockford...	1	62	18	20	37.8	.....	4	54	23	—11	23.3	0.45
Algona...	1	66	21	8	37.8	.....	3	57	23	—17	21.1	0.40
Webster City...	26	67	21	10	33.3	.....	2	54	23	—14	22.1	0.06
Boonesboro...	1	62	21	11	38.0	0.80	3	53	23	—14	23.4	.....
Fontanelle...	1, 7, 27	67	21	13	40.4	0.63	3	53	23	—14	24.0	0.10
Grant City...	26	71	21	10	40.2	.....	3	60	23	—20	21.8	0.20
Sac City...	26	68	21	10	39.3	.....	2	52	22, 23	—14	22.3	0.30
Logan...	27	65	21	8	41.6	.....	2	58	23	—17	24.4	0.20
Woodbine...	3	78	21	8	39.9	0.03	2, 3	56	23	—19	23.0	0.31
West Union...	11	76	18	19	40.9	1.17	.....	.....	.....	.....	.....	.....
Averages...	.....	.....	.....	.....	38.8	0.60	.....	.....	.....	.....	22.9	0.45
MISSOURI.												
St. Louis...	2, 4	74	22	25	47.3	1.87	4	58	24	—4	32.0	1.89
Allenton...	4	80	22	14	45.9	2.16	4	64	24	—16	29.6	2.85
Hematite...	2	83	22	14	47.0	2.19	1	71	24	—25	31.5	3.62
Hannibal...	1	69	22	22	44.0	1.51	4	66	24	—10	27.4	1.10
Rolla...	4	77	22	15	45.7	2.55	4	62	24	—23	30.5	2.44
Jefferson City...	27	78	22	21	46.6	.....	1	65	24	—10	26.0	.....
Kansas City...	27	74	21	20	45.5	0.50	4	58	24	—6	29.4	0.60
Oregon...	1, 12	74	21	17	45.2	0.35	3	63	23	—11	28.8	0.45
Corning...	12	74	21	18	42.7	0.45	3	65	23	—13	27.1	0.35
Averages...	.....	.....	.....	.....	45.5	1.45	.....	.....	.....	.....	29.1	1.66
KANSAS.												
Atchison...	12	72	21	16	43.5	0.65	3	62	24	—7	27.6	0.73
Williamstown...	27	75	21	19	46.3	0.64	30	66	24	—10	30.4	1.12
Leavenworth...	12, 27	72	21	17	44.0	0.76	3	62	24	—11	28.3	0.65
Olathe...	12, 27	71	21	15	43.4	0.50	4	63	24	—11	27.1	0.40
Paola...	2	78	21	17	45.6	0.47	3, 4	63	24	—12	29.3	0.80
Baxter Springs...	4	75	21, 22	22	48.8	1.50	4	64	24	—10	31.7	0.90
Lawrence...	12	72	21	17	44.9	0.57	3	64	24	—10	28.7	0.72
Holton...	12	71	21	14	43.4	0.50	4	66	23	—12	28.2	0.48
State Ag'l College	27	74	21	17	45.6	0.13	4	68	23	—11	30.1	0.45
Council Grove...	27	74	21	16	45.6	0.20	4	66	23	—12	29.2	0.52
Douglass...	1	74	21	18	46.6	.....	3	66	23	—7	31.3	1.28
Averages...	.....	.....	.....	.....	45.2	0.59	.....	.....	.....	.....	29.3	0.73
NEBRASKA.												
Omaha Mission...	26	72	18	22	44.7	0.10	3	70	23	—15	27.1	0.53
De Soto...	27	67	21	13	41.3	0.07	3	57	23	—18	24.7	0.13
Bellevue...	26	74	21	15	42.9	.....	3	63	23	—11	28.1	0.10
Nebraska City...	1, 26, 27	72	21	13	42.0	0.20	3	66	23	—14	26.1	0.17
New Castle...	1	72	21	10	.....	.....	3	68	23	—22	.....	.....
Averages...	.....	.....	.....	.....	42.7	0.09	.....	.....	.....	.....	26.5	0.23
UTAH.												
Coalville...	26	62	24	14	37.8	0.70	1	52	22	—25	19.1	1.30

NOTES OF THE WEATHER.

NOVEMBER, 1870.

Houlton, Me.—Ground frozen hard; no sleighing yet, 30th.

West Waterville, Me.—Auroras 16th, 17th, 24th; first sleighing 20th. Month 2.34° warmer than average of six years, and had sixteen inches snow.

Gardiner, Me.—Auroras 16th, 17th, 19th, 23d, 27th. A warm November; no sleighing; plowing possible throughout.

Oxford, Me.—Thunder, then rain, 3d; auroras 19th, 24th, 30th.

Cornishville, Me.—Thunder-shower 13th. Average November temperature for forty years $33^{\circ}.33$; this, $37^{\circ}.87$. Autumn has been remarkably pleasant.

Antrim, N. H.—Thunder storm 3d; little rain; wells very low.

Contocookville, N. H.—Thunder-shower 3d; auroras 16th, 17th, 24th.

Woodstock, Vt.—Heavy thunder-storm 3d; first skating 26th.

West Charlotte, Vt.—Heavy thunder-showers, 3d; Lake Champlain very low. Pastures good 10th; first snow, slight, 19th, the last on April 7th.

Kingston, Mass.—Lightning 3d; mild pleasant month; pastures green and dandelions and other flowers in blossom.

Georgetown, Mass.—Thunder-storm, lightning vivid, 3d. Little ice or snow.

Mendon, Mass.—Thunder-storm 2d; ground frozen two inches 30th.

Richmond, Mass.—Heaviest storm of the season, thunder, 3d; first snow 19th. Ground has been but slightly frozen; streams very low.

Moriches, N. Y.—Thunder-showers 3d; auroras 16th, 17th, 24th.

South Hartford, N. Y.—Severe thunder and lightning 3d. Month very mild and favorable for out-door labors.

Cooperstown, N. Y.—Month pleasant, 3° above average; few cloudy days; ground dry; no frost; springs low.

North Hammond, N. Y.—Sleighing one day; last of month very mild.

Utica, N. Y.—Thunder-shower 3d; ground first covered with snow 15th.

Depauville, N. Y.—Thunder 3d; auroras 12th, 13th, 16th, 21st, 29th; first snow 14th. Month pleasant for plowing; good pasturage.

Palermo, N. Y.—Thunder-storm 3d; roads dry 8th; first snow 14th. Magnificent autumn; much plowing done this month.

Lockport, N. Y.—Thunder-shower 3d; first snows 14th, 23d; sleighing 23d, 24th.

Buffalo, N. Y.—Mean temperature of this month exactly the average of twelve Novembers past, but had more clear days.

Newark, N. J.—Temperature average, but more pleasant clear days than usual. The fall one of unusual beauty, nearly seventy fair days.

South Orange, N. J.—First frost 4th, ice 15th, snow 19th.

New Germantown, N. J.—Distant thunder 3d; faint auroras 17th, 18th, 19th; first snow, slight, 19th. Very pleasant month.

Greenwich, N. J.—First heavy frost 16th; tomatoes and Lima beans till 23d; very little snow; mild month and autumn.

Fallsington, Pa.—Thunder-shower 3d. A pleasant month.

Philadelphia, Pa.—First ice 11th; first snow 19th; heavy rain 22d.

Horsham, Pa.—Month remarkably open, last part delightful.

Factoryville, Pa.—Distant lightning 3d; first snow to cover ground 18th.

West Chester, Pa.—Lima beans still green 7th; first snow squall 18th.

Parkerville, Pa.—Lightning, thunder-showers 3d. Twelve smoky days.

Catawissa, Pa.—Month pleasant. Many wells on high places dry.

Ephrata, Pa.—Distant thunder and lightning, rain, 3d; first ice 7th; snow 18th.

Carlisle, Pa.—Thunder-storm 3d; first killing frost 11th. Delightful month.

Fountain Dale, Pa.—Thunder-shower 3d; first ice 11th; first snow 19th. Weather fine, and plowing throughout the month.

Tioga, Pa.—First cold rain this fall 18th; a little snow 19th.

Connellsville, Pa.—Ground frozen 1st; thunder-shower 3d; first snow 18th.

Brownsville, Pa.—First snow 15th. Month very pleasant but dry.

New Castle, Pa.—First snow 16th. No Indian summer.

Beaver, Pa.—First ice 2d; first snow 15th. A delightful month.

Kent County, Del.—First ice 11th; ground frozen 11th, 16th, 17th; auroras 16th, 17th; ice over half an inch thick 20th, 21st.

Woodlawn, Md.—Aurora 19th. Month $6^{\circ}2$ above last year.

Fallston, Md.—Thunder-shower 3d; first ice 11th; first snow 19th.

Emmitsburg, Md.—Thunder-storm 3d; some snow 19th. Month fine.

Hampton, Va.—First frost since March 30th, 1st; first ice since March 19th, 16th. Month dry and pleasant, $6^{\circ}5$ warmer than in 1869.

Surry Court House, Va.—First ice since March 25th, 1st; dandelions, blackbirds 11th. Month fair, mild, dry; warmest fall remembered here.

Piedmont, Va.—Distant thunder 3d; first snow 17th; rain, hail, snow 18th; frogs heard 29th. Garden vegetables green till 11th.

Lexington, Va.—First heavy frost 1st; snow on mountains 23d.

Albemarle, N. C.—First killing frost 11th; aurora 19th; wild geese 30th.

Gowdeysville, S. C.—First killing frost 11th; ice 16th. Fine month.

Berne, Ga.—Peach blossoms 1st; thunder and lightning 6th; slight frost 16th.

Penfield, Ga.—First killing frost 16th; ice, aurora 17th; hail 22d. Had beans, tomatoes, okra, &c., from garden till 11th.

Moulton, Ala.—Ice 11th; first snow 22d. A pleasant month but dry.

Selma, Ala.—First killing frosts 16th, 17th; heavy snow storm 22d.

Greene Springs, Ala.—Distant lightning and thunder 5th; unprecedented snow-storm of 10 inches, 22d.

Coatopa, Ala.—Nipping frost 10th; ice, ground frozen 17th; rain 20th to 22d, then snow; distant thunder, lightning, and rain 29th.

Jacksonville, Fla.—First frost 16th. Month 2° above average.

Gilmer, Tex.—First ice 16th. Month closed with fine weather.

Bluff, Tex.—First frost 17th; thunder-storm 28th. Post-oak leaves falling.

Ponchatoula, La.—Grinding cane 4th; thunder, blue birds 5th; figs ripening 8th; robins 15th; hard frost 17th; thunder-shower 29th.

Columbus, Miss.—Killing frost, ice 17th; rain all day 21st; snow 22d.

Brookhaven, Miss.—First killing frost, ice 16th; snow 21st, 22d.

Fayetteville, Ark.—Heavy thunder, lightning, rain 8th; frost, ice 16th, 21st, 22d; slight snow 23d.

Elizabethton, Tenn.—Ground frozen 19th; slight snow 25th.

Pine Grove, Ky.—Ground frozen 1st; snow on 5 days, slight. Month dry.

Shelby City, Ky.—First snow 15th. Month dry and pleasant.

Salem, Ohio.—First frozen ground 1st; thunder 3d, and lightning 4th; first snow 14th. A mild open fall.

Adams's Mills, Ohio.—Ice 1st; first snow, slight, 15th. Indications of aurora nearly every night, but obscured by clouds.

Carson, Ohio.—Unusual frequency of brilliant auroras in October and November.

North Fairfield, Ohio.—First ice 1st; lightning 2d; snow, 12 inches, 23d.

North Bass Island, Ohio.—First frost 7th; ice 10th; snow 20th, 12.8 inches.

Urbana, Ohio.—Lightning 2d; thunder 4th; snow gone, laid 6 days, 28th.

Bethel, Ohio.—First hard frost 1st; great snow-storm, 6 inches, 22d.

Carthage, Ohio.—Distant lightning 2d; auroras 8th, 16th, 22d, 28th.

Mount Auburn, Ohio.—First hard frost 10th; first snow 18th; snow and rain 22d.

Kelley's Island, Ohio.—First frost, light, 7th; ice 10th, snow-squalls 18th.

Detroit, Mich.—Thunder-shower 2d; snow, 6 inches, 23d; auroral haze 24th, 29th.

Ann Arbor, Mich.—Thunder-showers 2d, 8th; auroral light 18th.

Alpena, Mich.—First frost 7th; auroras 12th, 14th, 24th.

Litchfield, Mich.—Heavy thunder 2d, 10th; first snow-flakes 19th. Springs failing, pastures green, ground open till 30th. No Indian summer.

Grand Rapids, Mich.—Lightning, thunder, rain 8th. Warmest, pleasantest November in Western Michigan in 30 years.

Copper Falls, Mich.—Very pleasant month, its 15 inches snow gone.

Aurora, Ind.—Lightning 2d, 8th, 13th; first snow 15th; aurora 19th.

Vevay, Ind.—Lightning, rain 2d; first heavy frost 10th; first snow, 6 inches, damp, 22d, 23d; mild, mosquitoes lively 28th.

Laconia, Ind.—First ice 1st; first snow 15th; aurora 19th. A delightful fall, no severe cold, and roads firm and dry.

Knightstown, Ind.—First killing frost 1st; thunder-shower 4th; first snow-flakes 15th. A very fine November.

Mattoon, Ill.—Aurora 17th. Many wells and cisterns dry.

Charleston, Ill.—Lightning, rain, thunder, 8th, 13th. Still very dry.

Louisville, Ill.—Heavy thunder-storm 4th; first hard freeze 9th.

Belvidere, Ill.—Very mild month and autumn, few cold days.

Winnebago, Ill.—Lightning 7th, thunder, rain 8th; auroras 17th, 18th, 19th.

Hennepin, Ill.—Good weather for farmers; pastures good yet. Frequent frosts to 7th; thunder-shower 8th; thunder and forked lightning 13th.

Havana, Ill.—Thunder-showers 4th, 8th, 13th; first snow-flakes, 15th.

Mount Sterling, Ill.—Thunder-storms 4th, 8th; first snow, 23d. Month fine, roads excellent, strawberries bloomed the first half of the month.

Manitowoc, Wis.—Thunder-storms 8th; first snow-flakes 9th; aurora 18th.

Milwaukee, Wis.—First snow, an inch, 15th; auroras 17th, 18th.

Mosinee, Wis.—Aurora 3d; southern lights 16th. Very fine weather.

Baraboo, Wis.—Remarkable November; dry and clear; birds returned.

Tunnel City, Wis.—First snow, light, 8th; aurora 9th.

Bayfield, Wis.—First snows 5th, 20th. Ground bare, open, mellow, 30th.

Minneapolis, Minn.—Warmest November on our records.

Koniska, Minn.—Thunder and lightning 7th. Month fine and dry.

New Ulm, Minn.—Auroras 17th, 18th, 19th. Fine for farm work.

Waukon, Iowa.—Auroras 16th, 17th, 18th, 19th. Month dry, pleasant.

Monticello, Iowa.—The pleasantest November in many years.

Bowen's Prairie, Iowa.—Month warm; streams low, no snow; plowing.

Iowa City, Iowa.—First snow, slight, 15th. Month and fall very mild.

Independence, Iowa.—Thunder-storm 8th. Month unusually fine.

Boonesboro, Iowa.—Month about 4° above its average in 16 years.

- Logan, Iowa.*—No rain; every day fit for out-door work.
West Union, Iowa.—Thunder-storm 8th; first snow 13th; aurora 17th. Mean temperature 10° above that of November, 1869.
St. Louis, Mo.—Thunder-shower 4th; first snow, slight, 15th.
Hematite, Mo.—Finest November known in many years.
Rolla, Mo.—Thunder-storm 4th, 11th; thunder 8th; first snow 15th.
Oregon, Mo.—Auroras, 8th, 18th, 19th, 22d; bluebirds, crickets 12th; first snow, light, 23d; roads, pasture, health, good; springs well filled.
Corning, Mo.—Thunder-shower 8th; first flurry of snow 23d. Pleasant month, little rain, 27 starlight evenings.
Baxter Springs, Kans.—First ice 15th; first snow 23d; thunder 28th.
Lawrence, Kans.—Sixty-one meteors 14th. Fine month for out-door work.
Bellevue, Nebr.—Beautiful aurora 19th. Fine weather, good roads.
Cathlamet, Wash. Ter.—Dandelions, daisies, &c., blooming all the month.
Deer Lodge City, Mont. Ter.—Beautiful month, no snow in valley 30th.

DECEMBER, 1870.

- Gardiner, Me.*—Snow; pond iced over; open 242 days, 17th; auroras 17th, 27th. Month $2^{\circ}.15'$ warmer than its average for seven years.
Gardiner, Me.—Auroras 1st, 16th, 17th; river closed 16th. Month dry, $4^{\circ}.24'$ warmer than its average of 35 years.
Lisbon, Me.—First sleighing 31st. Brooks and wells very low.
Norway, Me.—Month very mild, no good sleighing, streams low.
Cornishville, Me.—Month $5^{\circ}.25'$ above its average (21°) for 40 years.
Stratford, N. H.—Snow on 18 days, 17 inches; no sunshine 7th to 14th.
Tamworth, N. H.—Aurora, brooks freezing over 17th; drought 31st.
Contocookville, N. H.—First sleighing 9th; plowing 13th; auroras 14th, 15th, 17th, 18th, 20th, 24th; river frozen over 17th. First half of month mild.
Goffstown, N. H.—Drought continues; hard year for farmers.
Craftsbury, Vt.—First half of month very warm, last half cold.
Randolph, Vt.—Every month this year above the average temperature, except February and March. Year $2^{\circ}.7'$ above mean temperature of five years.
Woodstock, Vt.—Drought continues; ice a foot thick, ground frozen a foot.
Topsfield, Mass.—First frozen ground 15th; drought of summer continues.
New Bedford, Mass.—Little frost at any time; navigation open all month.
Lunenburg, Mass.—No sleighing till 28th, and then poor.
Williamstown, Mass.—Month mild; no sleighing.
Middletown, Ct.—Auroras 15th, 17th; river closed 21st; thermometer reached zero for first time in 1870 on 30th.
Brookfield, Ct.—Month cold and windy; many springs and wells dry.
Moriches, N. Y.—Auroras 10th, 15th; first ice and skating 17th.
South Hartford, N. Y.—Heavy thunder 12th; lake and canal navigation closed 10th, 16th. A dry month; springs and streams very low.
Luzerne, N. Y.—Auroras 6th, 8th, 15th; lake frozen over 17th; waters very low.
Glasco, N. Y.—Hudson River closed 27th, and harvesting ice to 31st.
Minaville, N. Y.—Highest water in March, and greatest drought known here in 1870. No sleighing this December; waters very low.

Cooperstown, N. Y.—Fine, pleasant month. The year was the warmest and its winter the mildest (except March) in twenty-one years, and crops the earliest.

North Hammond, N. Y.—Ground open till 8th; St. Lawrence closed 24th.

South Trenton, N. Y.—Nine inches snow on ground, but poor sleighing. The warmest year since 1848.

Depauville, N. Y.—Auroras 14th, 15th 16th; first sleighing 19th.

Palermo, N. Y.—Finished plowing 13th; first sleighing 23d. Many brooks dry. The warmest year on my record for seventeen years; total snow 116 inches.

Little Genesee, N. Y.—Mild and muddy till snow of 14th; sleighing to 31st.

Buffalo, N. Y.—First week mild, no frost, thunder-shower 5th; rough and cold after 15th; first sleighing 26th; mean temperature same as for thirteen years.

Trenton, N. J.—Slight earthquake 14th; canal frozen first time 22d.

New Germantown, N. J.—Auroras 10th, 15th; ice is six inches thick 27th.

Greenwich, N. J.—Roses 1st; blue violets 4th; wintry after 20th to 31st.

Hamlinton, Pa.—Very dry, springs failing, but little snow.

Plymouth Meeting, Pa.—Very dry, mild to 21st, then cold to 31st.

Factoryville, Pa.—No real snow-storm; many wells dry; ground hard frozen.

Fountain Dale, Pa.—First half of month mild, last half cold.

Tioga, Pa.—Diffuse lightning 7th; a very pleasant month.

Grampian Hills, Pa.—Heavy thunder-storm 5th; to 20th pleasant; little snow.

Pittsburg, Pa.—Hard freeze 1st; river full of ice, four inches thick, 23d.

Brownsville, Pa.—Thunder-storm 5th; river closed 23d; a fine month.

Cannonsburg, Pa.—Dandelions 4th; thunder and lightning 5th.

Milford, Del.—First snow 18th; coldest weather in several years 31st.

Woodlawn, Md.—Susquehanna River closed 23d.

Emmitsburg, Md.—Aurora 16th; coldest day in 1870, 24th.

Hampton, Va.—To 23d very mild and dry, then snow and severe cold.

Surry Court House, Va.—Thermometer 4° (lowest since 1856) 25th; to 21st warm, dry, windy, then to close calm, snowy, cold.

Vienna, Va.—Cold 20th, very cold 21st, still colder 22d, coldest 24th.

Piedmont, Va.—Very cold 23d to 26th; ice six inches; month dry, windy.

Wytheville, Va.—Coldest day since December 12, 1868, 24th.

Goldsboro, N. C.—Thunder and lightning 11th, 31st; very cold 24th, 25th.

Oxford, N. C.—Three inches snow 28th; coldest December in many years.

Statesville, N. C.—Coldest December days in forty years, (or more, 24th, 25th.

Smith's Ford, S. C.—Coldest spell in several years, 24th, 25th.

Bluffton, S. C.—First frogs and robins heard this winter, 1st; sleet and snow, two to four inches, 22d; coldest Christmas (24th and 25th) in many years.

Penfield, Ga.—Ripe strawberries 15th to 23d; Christmas coldest day since January, 1852, when it was 1°.

Greene Springs, Ala.—Cold week after 20th; ice several inches thick.

Moulton, Ala.—Pleasant for out-door work till 21st; then a cold week.

Fish River, Ala.—Sleet, then one-quarter inch snow, 22d; most in twenty years.

Jacksonville, Fla.—Hard freeze 23d to 25th, injuring orange and other trees.

Pilatka, Fla.—Hardest freeze since 1855, 23d, 24th; lemon, lime, and young orange trees killed to the ground; bearing orange trees will survive it.

Clarksville, Texas.—Ice 11th to 20th, mornings; 23d, 24th, froze all day.

Pontachoula, La.—Coldest morning since 1851; ground frozen.

Brookhaven, Miss.—First frozen ground 20th; frozen five inches; ice three inches thick 24th; the coldest "snap" since February 8, 1835.

Clinton, Miss.—Hard frost 21st; ground frozen three to six inches 22d to 25th; robins here 26th.

Elizabethton, Tenn.—Streams full of ice 24th, 25th, and ground frozen six inches.

Pine Grove, Ky.—Snow, hail, sleet, rain, 19th; sleet, snow, 20th; snow, 21st.

Shelby City, Ky.—Aurora 21st; first skating 22d; ice six inches 27th.

Steubenville, Ohio.—Rain, with thunder, lightning, hail, and high wind, 5th.

Cleveland, Ohio.—Thunder-storm 5th; river and canal freezing over 21st. December temperature in 1856, 24°·81; this year, 28°·93; average for sixteen years, 30°·98.

Kelley's Island, Ohio.—Slush ice in lake 21st; lake crossed on ice 24th.

Carson, Ohio.—Sudden thunder-storm, hail, almost a hurricane, 5th.

North Fairfield, Ohio.—Heavy rain and wind, severe thunder and lightning, 5th; storm commenced with hail; snow, ending in rain, 19th.

Urbana, Ohio.—Month 5°·5 warmer than in 1869; ice on ponds twelve inches.

Bethel, Ohio.—Driest fall and earliest winter in many years.

College Hill, Ohio.—Ohio River full of ice; smaller streams closed.

Ann Arbor, Mich.—A foot of snow on the ground; good sleighing.

Ontonagon, Mich.—Season mild, with but half the usual snow.

Northport, Mich.—Summer unusually wet and warm; fall very fine, and no severe weather till 20th, and then not very severe.

Mount Carmel, Ind.—Aurora 4th; coldest day since January 1, 1864, 24th, but exceeded by February 4, 1856, when the thermometer stood at 23°.

Kentland, Ind.—Snowed before freezing; hence ground is not frozen.

Vevay, Ind.—Much ice in river 21st; six to eight inches thick 27th.

Merom, Ind.—Wabash river frozen over; crossed by teams 25th.

Marengo, Ill.—Beautiful till snow-storm on 7th; thunder and lightning 12th; thunder and snow 13th; first sleighing 19th; a blustering Christmas.

Mattoon, Ill.—No rain, ponds dry; no running streams here; water scarce, two weeks' sleighing—very rare occurrence here.

Aurora, Ill.—Ponds frozen 20th; then to 26th very cold; ground bare.

Belvidere, Ill.—Unusually warm spring, summer, fall and December to 16th. Rain and melted snow in 1870, 27·82; in 1869, 42·49 inches.

Hennepin, Ill.—Fair and pleasant to middle; 20th to 26th cold, clear, calm; then milder to close, with good pasture and plenty of good butter.

Havana, Ill.—Rivers bridged with ice 21st; very pleasant 31st.

Dubois, Ill.—First snow-fall 19th, two months later than in 1869.

Galesburg, Ill.—Except a few days, a fine month; no sleighing.

Andalusia, Ill.—First snow 11th; Mississippi closed the 20th; drought.

Hingham, Wis.—First snow two inches 5th; streams frozen 18th; being low, some froze to the bottom, making water very scarce for cattle.

Mosinee, Wis.—Cold stopped vegetation 7th; not enough snow for logging.

St. Paul, Minn.—Mild to 20th; river closed 21st; moderate 26th to 31st. Average mean of 46 years, 43°; of 1870, 46°.60; 187 clear days in 1870; a pleasant year.

Koniska, Minn.—Light snow; ground frozen eighteen inches; lake ice eighteen inches.

New Ulm, Minn.—River bridged with ice 21st; no snow or frost 31st.

Madelia, Minn.—Rivers and lakes closed 20th; ground frozen two feet 30th.

Bowen's Prairie, Iowa.—Month dry; springs low; roads dusty.

Guttenburg, Iowa.—Thunder-shower 5th; Mississippi closed 21st.

Iowa City, Iowa.—To 20th very mild, then the coldest week in the year. The year unusually warm and dry; 2°.65 above mean of 31 years; rain-fall 16.17 inches less than mean of 22 years.

Independence, Iowa.—Plowing to 5th; thunder-storm and snow-squall 5th; raw Christmas; snow gone; mild; wheeling splendid.

Boonesboro, Iowa.—No storms worth naming for two and a half months.

Sac City, Iowa.—Finest fall and winter I ever experienced.

Woodbine, Iowa.—Delightful to 16th, much plowing done; ground dry 31st.

St. Louis, Mo.—Month of great and sudden changes of barometer, followed by as great atmospheric changes.

Hematite, Mo.—Gale 5th; deepest snow-fall for years 19th; coldest ever known here 24th; killed peach buds and some twigs and even trees.

Oregon, Mo.—Roads fine; plowing 16th; auroras 19th, 28th, 29th, 30th; dusty 22d; ice eight inches thick 26th; thawing 27th to 31st.

Leavenworth, Kans.—The sudden changes, (41° from heat to cold, and 49° cold to heat,) 19th to 30th, (not mere cold,) killed budded peach buds.

Olathe, Kans.—Open to 17th, when four inches snow; below zero all 23d, and below 15° from 19th to 25th; the hardest freeze in at least 13 years.

Paola, Kans.—Gales 3d, 4th; fowls froze 25th; robins and bluebirds 30th.

Baxter Springs, Kans.—Coldest since settlement of this county, 24th.

Bellevue, Nebr.—The Missouri and Platte closed 20th; pleasant yet remarkable month; no rain, no snow to measure, and roads never better.

Nebraska City, Nebr.—Floating ice in river 14th; river closed 21st.

Watonsville, Cal.—Thunder-storm 2d; thunder 5th; coldest December known here for many years.

Deer Lodge City, Mont. Ter.—Middle of month colder, latter part warmer than usual; month 4°.3 colder than average of 4 years; no snow in valley.

Missoula, Mont. Ter.—River closed 13th; warm from 26th to close.

Denver, Col. Ter.—Coldest month since settlement of this Territory.

